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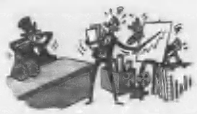

SPECIAL REPORT: WINNERS AND LOSERS

Find out which of the Top 100 Emerging Companies that *Computerworld* identified last November are actually doing what they set out to do – and which couldn't cut the mustard. Page 38

COMPUTERWORLD

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THE GREAT DIVIDE

Users Split on Impact of Microsoft Divestiture

Gates vows to appeal decision

BY MITCH BETTS
WASHINGTON

A federal judge ordered the breakup of software giant Microsoft Corp. last week for abusing its Windows monopoly power. But corporate technology buyers were sharply divided on whether the breakup — which is far from a sure bet — is good or bad.

It depends on whether users are more concerned about big government or big Microsoft. Some information technology managers said they don't mind dealing with a monopoly and the government should leave Microsoft alone. Some said they are worried about having to deal with two companies for support.

Others agreed that the government needed to take aggressive action to restore competition.

The dramatic ruling is probably headed — sooner or later — to the U.S. Supreme Court. In the meantime, Microsoft has started asking the courts to delay implementation of the government's divestiture and regulatory plan while the appeal unfolds. So an actual split into two companies — one for Windows and one for applications — isn't imminent.

Evan Benrubi, vice president

Users Split, page 14

Will Legal Distraction Doom Business-as-Usual Promise?

Upheaval expected if remedies stick

BY DOMINIQUE DECKMYN

Microsoft Corp. maintains that its business and its focus won't be affected while it appeals a court order to split the company into two pieces. But many observers consider that unlikely — especially if interim conduct remedies are enforced throughout the appeals process.

"I think everybody in the industry is worried that Microsoft [could be] more focused on the trial than its clients," said Bill Whitford, chief operating officer at eScreen in Overland Park, Kan., which is forging ahead with plans to install hundreds of Windows 2000 desktops.

Ed Toben, CIO at New York-based Colgate-Palmolive Co., concurred. "They might be saying it is business as usual, but this is a very unusual event, and at a certain level, this has to be taking their eye off the ball," Toben said.

The comparisons with IBM, which, under close antitrust scrutiny in the late '70s and early '80s, became overly cautious and slow to respond to market changes, add to the air of uncertainty for some users. But few observers expect Mi-

Legal Distraction, page 14

MORE ON MICROSOFT

- Legal experts say a breakup is often a last resort — and, in the end, Microsoft might be spared. **Page 16**
- What IT leaders have to say. **Page 16**
- Editorial: Judge Jackson or . . . Judge Judy? **Page 30**

For complete coverage of the Microsoft antitrust case, go to *www.computerworld.com*.

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"The court's order . . . is the right remedy for Microsoft's serious and repeated violations of the antitrust law."

— Joel Klein, assistant U.S. attorney general for antitrust

"We believe the proceedings in the District Court were flawed from the beginning and strayed further and further off course, both procedurally and substantively, as the case progressed."

— Bill Neukom, Microsoft's legal counsel

"There is credible evidence to suggest that Microsoft, convinced of its innocence, continues to do business as it has in the past and may yet do to other markets what it has already done in the PC operating system and browser markets."

— Judge Jackson

"This plan would undermine our high-tech economy, hurt consumers, make computers harder to use and impact thousands of other companies and employees throughout the high-tech industry."

— Bill Gates, Microsoft chairman

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ASP, ANYONE?

There are many reasons to use an application service provider, but also several things to consider. Page 58

DISMANTLING BOO

The failure of Boo.com and other e-commerce sites may be an omen for niche shops. Page 48

COMPUTERWORLD

JAVA TURNS 5; STILL SUFFERS TANTRUMS

Client-side Java gets jolt from Sun

BY CAROL SLIWA
SAN FRANCISCO

Sun Microsystems Inc. sought to revive interest in client-side Java last week, unveiling a product called WebStart that will let users download a Java application and the necessary runtime environment with one click in their browsers. The application will be stored in a cache on their PCs, so they will need to download it just once.

That might help companies such as Food Services of America. It's testing a Java application that will let restaurants place orders over the Internet. "It would have been something to consider," said Roy Harper, lead software engineer at the Seattle-based food supplier.

Despite all the attention given to server-side Java at last week's JavaOne Conference here, attendees such as Harper showed that Java is still alive and kicking on client machines

Client-side Java, page 93

Java Momentum

Java is gaining some critical mass.

- 19 vendors plan to license J2EE from Sun for server-side development
- There now are 2.5 million Java developers
- Java flavors include EmbeddedJava for devices, Java Card for smart cards, JavaTV for digital television, Java Embedded Server for modems and set-top boxes

IBM's Bean and J2EE strategy confuses users

BY LEE COPELAND AND MARK HALL
SAN FRANCISCO

Developers who hope Java will allow them to develop software components that can run on any computing platform got some discouraging news at JavaOne here last week.

IBM, an uneasy ally of Sun Microsystems Inc. in the move to create a standard Java, announced that by year's end it will deliver about 100 Enterprise JavaBean WebSphere components, initially geared toward financial services, supply-chain and customer management applications. Users fear that these and other vendor Beans won't conform to

IBM Strategy, page 93

JANE KIRKLAND, CIO at Freemarkets Inc., worked overtime making sure a $200 million Internet auction for a global client was successful

HITS & MISSES

MANY PUBLICATIONS RUN LISTS OF HOT START-UPS. But seven months after *Computerworld* named its Top 100 Emerging Companies of 2000, we take a hard look at which ones blossomed and which ones didn't. The winners saw their revenues grow, introduced successful products, issued IPOs or were acquired by big-name vendors. And they have one more thing in common: They're helping corporations build and solidify relationships with customers and suppliers over the Web.

Special report begins on page 38.

FILLING ORDERS A HOT E-BUSINESS

Companies race to offer logistics services

BY JULIA KING

If you log on to MuseumCompany.com's computers in Virginia and buy the $145 Frank Lloyd Wright clock before 2 p.m., a start-up in Ohio called SubmitOrder.com Inc. will pick, pack and ship your order from its warehouse by 5 p.m. the same day.

Buy excess semiconductors during one of Melbourne, Fla.-based USBid.com's online auctions, and the order is filled from one of five distribution facilities operated by 8-month-old Copera Inc. in White Plains, N.Y.

Across the board, Internet businesses are turning to a new breed of back-end logistics providers to physically negotiate the often long haul between cyberspace and the real world.

With names like Electron Economy Inc. and ReturnCentral.com, these new, IT-intensive fulfillment companies handle much more than door-to-door deliveries. They manage everything that happens after customers click the Buy button — from managing inventory and packing orders to authorizing returns and fielding customer complaints.

Between now and 2004, the market for such services is projected to grow at a rate of 36% per year, from $2.5 billion today to $8.6 billion, according to International Data Corp. in Framingham, Mass.

"All of the sudden, companies are starting to pay attention to what happens on the back end," said IDC analyst

Fulfillment, page 12

ETHERNET MEETS THE FACTORY FLOOR

But some question need for GE, Cisco initiative

BY JAMES COPE

Whether there's a "network disconnect" between enterprise back-office systems and manufacturing plants depends on whom you talk to. GE Industrial Systems and Cisco Systems Inc. seem to think there is one: Last week they formed a new company to bridge that divide.

The company, GE Cisco Industrial Networks Inc. in Charlottesville, Va., began operations immediately. It sells and services Ethernet networks that connect business systems such as those from SAP AG with factory systems that con-

GE, Cisco Team, page 10

VIRUS THREAT SPREADS TO WIRELESS

Attack on cell phones in Spain a 'warning shot'

BY BOB BREWIN

Users of wireless devices face increased vulnerability to virus attacks as the gadgets get smarter, more powerful and more popular. That wake-up call was delivered by a cellular phone virus reported in Spain last week, according to network security specialists.

A new chain e-mail virus, similar to the Love Bug virus that plagued PC users worldwide last month, surfaced last week in the wireless network operated by Madrid-based Telefonica SA, according to F-Secure Corp., an Espoo, Finland-based antivirus company. F-Secure said that the Spanish virus replicated much like the Love Bug, which sent messages out to PCs. But the new virus instead sent messages to randomly dialed numbers on mobile data phones operating on the European Global System for Mobile Communications standard.

Although Telefonica said it had "no knowledge of the existence of such a virus," re-

Wireless Virus, page 12

AT A GLANCE

Wireless Vulnerabilities

- Widening use, from 400 million subscribers in 1999 to 2 billion in 2003
- Increased use in enterprise
- Widely available hacker tools
- Smarter devices, which lead to greater vulnerability
- Few safeguards

MARK KATZMAN

TO HAVE AND TO HOLD

From customized jobs to flexible work policies to unlimited earnings potential, CIOs like Steve Brazile at Earthgrains Co. are finding ways to make their IT organizations too attractive for employees to leave. In this week's installment of our series on The 100 Best Places to Work in IT, we look at the companies that are best at retention and training. Page 60

WALTER P. CALAHAN

QUALITY COPS

Quality assurance managers like Susan Burgess are responsible for the success or failure of mission-critical IT systems that sometimes literally mean the difference between life and death. This isn't work for the fainthearted. Page 82

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8 **IT EXECUTIVES LOBBY** Capitol Hill on an array of issues, including H-1B visas, software piracy laws and trade with China.

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58 **COMPANIES CAN** get plenty of benefits by turning to application service providers, but there are also risks to watch out for.

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71 **HACKERS CAN STEAL** your domain name with frightening ease, especially if the company that registers your domain allows online ownership changes.

QUICKSTUDY

73 **BLUETOOTH CAN** replace cables, be used to create ad hoc networks and provide a uniform way to connect devices anywhere in the world.

WEB SITE MAKEOVER

76 **STAPLES AIMS** to boost Web sales by adding information to some parts of its site, simplifying other parts and creating new shopping tools.

> Oh man, that sucks. Microsoft participated in some anticompetitive activity, but to have one vendor offer the gamut of software [we need is] a great thing.
>
> JOHN AMOS, McKESSON HBOC INC., ON THE MICROSOFT BREAKUP.
> SEE PAGE ONE

OPINIONS

MICROSOFT RULING

30 **MARK HALL** says Judge Jackson's ruling won't stop Microsoft's "applications" business from becoming another behemoth.

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48 **KEVIN FOGARTY** says the recent layoffs by companies such as IBM and Hewlett-Packard are shortsighted and wasteful.

56 **PETER G. W. KEEN** writes that the cyclical "shakeout" has begun in e-commerce, and IT leaders must help steer their firms to be ready for the period of consolidation after the dust settles.

65 **JOE AUER** says never tip your hand when negotiating an IT deal. With that in mind, he offers a list of things you should never tell a vendor.

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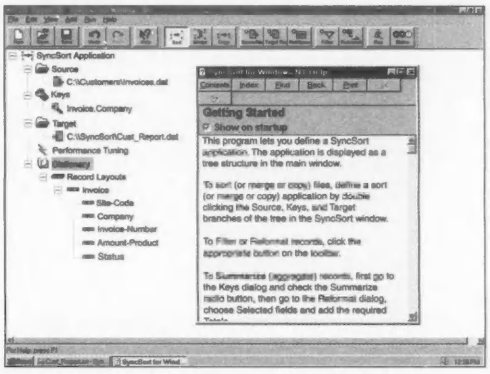

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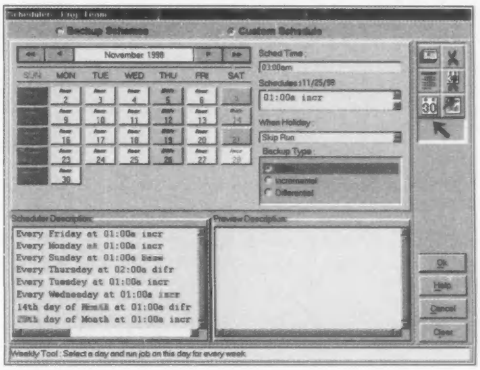
Another of Syncsort's state-of-the-art products is Backup Express, a powerful enterprise backup/restore solution. Designed for distributed processing, Backup Express allows you to attach storage devices to any computer on your network,



Through the simple, intuitive Backup Express interface, you can schedule backups, run restores, add devices, or check job status.

whether it is running UNIX, Windows NT, or NetWare. Yet centralized administrative control is always maintained through an intuitive drag-and-drop graphical user interface. Support for efficient online and offline database backup is also included.

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Data warehouse specialists recently voted Syncsort one of the top vendors in the prestigious "Data Warehouse 100." This honor reflects not only the importance of Syncsort products in warehouse development and management, but also the high quality of Syncsort's responsive, reliable customer support.

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Distributors Switching Focus to Web Business

Firms becoming key customer service links

BY JAIKUMAR VIJAYAN

RATHER THAN being squeezed out of the trading chain as some feared, some distributors are taking advantage of their demand-aggregation capabilities, logistics infrastructures and customer relationships to deliver new, revenue-generating services via the Web.

Southern Marketing Affiliates Inc. (SMA) in Jonesboro, Ark., is a distributor of agriculture-related supplies in 15 states in the South and Southwest. Later this month, SMA is scheduled to launch an online buying community called SMALink that will connect more than 300 suppliers, 2,000 dealers and several thousand farmers in the regions.

The site will allow SMA's dealers and customers to order online from comprehensive electronic supplier catalogs and check the status of orders, said Rodger Hurt, president of SMA. The goal is to drive more demand from dealers and customers by giving them more flexible ordering options, more product choices and much quicker access to information than before, he said.

Services that link distributors more closely with suppliers and dealers are going to be crucial going forward, said John White, director of worldwide business processes at Parker Hannifin Corp., a manufacturer of motion-control technologies in Cleveland.

The company is in the midst of an ambitious project to build a Parker-branded network linking its 7,500 global distributors, suppliers and customers in the commercial, mobile, industrial and aerospace segments. Parker's distributors provide personalized engineering and around-the-clock maintenance support for many of the company's highly engineered products globally, so it's crucial to involve them in the Parker network, White said.

"We keep hearing words about the disintermediation of [distributors] by Internet companies," he said. "The fact is that they are the customer service interface point" and thus continue to be crucial.

Milwaukee-based ICM Inc., a mail-order distributor of stationery products for banks and schools, is setting up a similar site linking its 1,000 dealers and more than 1,500 suppliers.

Like SMA, ICM is using technologies from Champaign, Ill.-based dChain Commerce Inc. to build the hub. The marketplaces give distributors automated ordering, online inventory management and Web-based order fulfillment and promotional capabilities.

Such sites "radically decrease the amount of time and expense involved in trying to coordinate the communication that is required" between the different partners in a trading chain, said CEO Brian Nelson.

For instance, a similar hub being developed by Pacific Bearing Co. in Rockford, Ill., will let its distributors cut the time spent ordering and buying custom products from an average of three days to just a few minutes, according to Robert Schroeder, the firm's CEO.

AT A GLANCE

Distributors Making Moves

A sampling of vendor services for distributors:

- DChain Commerce: Offers enabling technologies to help distributors set up electronic marketplaces linking suppliers, distributors and dealers.
- NetVendor Inc: Lets manufacturers and distributors link multiple Web distribution channels for direct materials.
- MRO.com Inc.: Helps tie manufacturers with distribution and supply chains.

T2 Struggles to Change Negative Image

Some still fear members' control over airline fares

BY MICHAEL MEEHAN

The spin wars over the proposed online travel Web site formed by the nation's largest airlines officially kicked into high gear last week, when executives for the site held a press conference to address what they say has become a negative perception of their company.

Insisting that the airlines that founded the site — dubbed T2 within the travel industry — won't be able to control content or pricing, executives promised complete disclosure of all products available on the site. They also promised to show no bias toward any of the five equity and more than 30 nonequity partners involved in the effort.

Founded by United Airlines Inc., Delta Air Lines Inc., Continental Airlines Inc., Northwest Airlines Inc. and American Airlines Inc., the site is scheduled to debut this summer, even as federal authorities examine its business model.

The Senate Commerce Committee last week postponed a June 22 investigative hearing until at least July.

T2 Chief Technology Officer Alex Zoghlin said one problem the Web site faces is that it has been under development and unable to market itself. "When our competitors have more lobbyists in Washington than we have employees, eventually the misinformation gets repeated enough that it becomes fact," he said.

Zoghlin said T2 will receive its fares from an airline industry clearinghouse, just like other online agencies, and will be paid the same commissions as other online and brick-and-mortar travel agencies. ITA Software Inc. in Cambridge, Mass., will supply the fare search engine for T2.

But many still question T2's intentions. Paul Ruden, senior vice president of legal affairs at the American Society of Travel Agents, has been a vocal opponent of T2. He said he believes it will create a collusive atmosphere in the airline travel arena and drive up ticket prices.

"It's still a mystery to us why one of these big carriers did not just grab this software if it's so wonderful and put it up on their own site," he said. "Why did they approach the marketplace as a pack?"

According to Zoghlin, T2 gave copies of its contracts to the Department of Justice in April and has been willing to provide the government with any and all information.

Industry Offers Guidelines For Consumer Protection

BY JENNIFER DiSABATINO

IBM, Microsoft Corp. and a who's who list of technology and Internet companies last week proposed a set of business guidelines they hope will protect online consumers in areas such as security, privacy and customer service.

"Our experience has been that consumers are screaming out for a reliable, Good Housekeeping seal of approval online," said Jim Harvey, a partner in the technology group at Atlanta law firm Alston & Bird LLP.

Harvey said the private sector is in the best position to negotiate the rules of the road for e-commerce, instead of relying on government to regulate and enforce traffic as it does in the brick-and-mortar world.

The technology heavyweights that formed the Electronic Commerce and Consumer Protection Group have published their guidelines at *www.ecommercegroup.com*.

But the guidelines don't focus on just privacy, said Sydney Rubin, a spokeswoman for the seven companies. "This is much broader consumer protection," she said.

For example, when a U.S. citizen buys goods via the Internet from a company in Mexico, the consumer may not know that there are no small-claims courts in that country, Rubin said. The guidelines would help protect customers, by offering better disclosures of information and setting up alternative methods of resolving disputes, she added.

"This looks like a useful step but not the final solution for protecting consumers in online commerce," said Jean Ann Fox, director of consumer protection at the Consumer Federation of America in Washington. Thus far, self-regulation "has been ineffective," she said.

Some of the language in the guidelines appears to be aimed at forcing customers to agree to go through company channels to resolve disputes instead of resorting to filing in court, Fox said. Although many consumers may want to work out conflicts directly with corporations "because it's quicker, faster, cheaper," they should also be able to reserve the right to go straight to the courts if they want to, she said.

"All in all, these [guidelines] provide a rather low standard for privacy protection," said Jason Catlett, president of Junkbusters Corp., a privacy advocacy group in Green Brook, N.J.

Harvey said the guidelines can be effective — but only if the government and consumers believe that companies are going to follow the guidelines they adopt.

"I think that legitimate companies will probably very widely adopt these [proposals] because it will add integrity to their [Web] sites, and that's what everybody is looking for," he said.

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BRIEFS

Digital Signature Bill Moves Forward

A bill that would allow many electronic signatures to have the same legal weight as written signatures was approved last week by a congressional committee. The compromise measure will now go back to the House and Senate for separate approvals before being forwarded to President Clinton.

Delphi Backs Auto Exchange

Delphi Automotive Systems Corp., formerly owned by General Motors Corp., last week announced that it signed a letter of intent to join Covisint, the automotive industry online exchange being developed by GM, Ford Motor Co. and DaimlerChrysler AG. Troy, Mich.-based Delphi is the world's largest automotive supplier and had more than $29 billion in revenue last year. It is the fourth auto-parts supplier to sign up to participate in the Covisint exchange in the past month.

Electronics B-to-B Market Announced

A consortium of electronics and telecommunications companies has announced a new business-to-business Internet marketplace. Partners in the venture, dubbed e2open.com, include Hitachi Ltd., IBM, LG Electronics Inc., Matsushita Electric Industrial Co., Nortel Networks Corp., Seagate Technology Inc., Solectron Corp. and Toshiba Corp. E2open.com was designed to streamline the electronics industry's supply-chain transactions, which total more than $700 billion per year.

Corel to Slash Spending, Jobs

Corel Corp. in Ottawa has announced plans to revamp the company. To trim $40 million in annual spending, the company said it will slash 320 jobs, or 21% of its workforce, and CEO Michael Cowpland will forgo his salary. The job cuts include terminations, contract cancellations and attrition. Staff in all departments will be affected.

Confab to Focus On MySAP.com

SAP denies customer confusion over product's role, claims large user base

BY JULIA KING

THIS WEEK, at its Sapphire user conference in Las Vegas, German software maker SAP AG will likely have a lot of explaining to do about its much-talked-about but little-understood mySAP.com offerings.

SAP claims to have licensed more than 1 million users of mySAP.com since it announced the business software last August. Yet mySAP.com has been far from a resounding success, according to John Hagerty, an analyst at AMR Research Inc. in Boston.

One big reason is that few users seem to understand exactly what mySAP.com is and how to transition from their current enterprise R/3 applications to SAP's e-commerce platform, he said.

"SAP talks about 1 million users, but what they're really talking about is a few big organizations with tens of thousands of users," Hagerty said. "You can get to 1 million pretty quickly that way."

Winning Customers

SAP spokesman Bill Wohl dismissed Hagerty's comment. "Lately, AMR seems focused on the negative in everything," he said, claiming that SAP has won "huge numbers" of additional mySAP.com users. Wohl said a related announcement will be made this week.

The three-day conference will include more than 30 sessions focusing on mySAP.com, which comprises business-to-business marketplaces, business software applications, application hosting services and what SAP calls "role-based portals" for different users performing different jobs.

To Mary Kay Devillier, director of e-business and information resources at chemical company Albemarle Corp. in Richmond, Va., mySAP.com "appears to be a constantly moving target, evolving in features and functionality and pricing. SAP is still juggling pricing, trying to figure out what will be accepted in the marketplace."

At its European users' conference last month, SAP announced new pricing scenarios aimed at providing more flexibility for customers.

Last week, SAP also announced 70 new service providers, which brings the number of companies it has certified to do mySAP.com consulting and implementations to 98.

> [MySAP.com] appears to be a constantly moving target, evolving in features and functionality and pricing.
>
> MARY KAY DEVILLIER, DIRECTOR OF E-BUSINESS AND INFORMATION RESOURCES, ALBEMARLE CORP.

"The marketplace continues to send signs and signals that customers are figuring out mySAP.com," said Wohl.

"There's no question that over the initial 12 months of mySAP.com, it was a very different way of thinking about solutions being delivered in general and being delivered by SAP," he said. "But the whole concept of confusion is really pretty much an old story at this point."

High-Tech Chiefs Lobby Key Issues at Capitol Hill Hearing

Intel exec departs from industry's antiregulation line

BY MITCH BETTS
WASHINGTON

A slew of high-tech industry executives came to Capitol Hill last week to lobby for more H-1B visas, more federal research, more trade with China and better enforcement of software antipiracy laws.

But the information technology executives didn't have to lobby very hard. At a hearing of the U.S. Congress' Joint Economic Committee, legislators seemed eager to please what they called "an all-star cast" of industry witnesses.

The lawmakers in attendance fawned over Microsoft Corp. Chairman Bill Gates, lauding his philanthropic ventures, tossing softball questions and steering clear of any mention of his huge antitrust battle with the U.S. government.

Intel Corp. Chairman Andrew Grove provided the only ripple in the smoothly orchestrated hearing by taking positions on Internet taxation and privacy that stray from the industry's usual antiregulation positions.

Net Tax Support

Grove, arguing that the sale of electronic goods should be treated the same as the sale of physical goods, said there's no justification for protecting e-commerce from taxation.

"I don't think electronic commerce needs federal or state subsidies in terms of tax advantages," Grove said. Most other IT companies support a moratorium or ban on Internet taxes.

Grove originally skipped the tax and privacy portions of his written testimony until asked about those issues by a senator. "I'm kind of in a minority position," Grove joked, "and I'm afraid of being hit by my opponents in the back!"

Regarding privacy, Grove said personal data is a form of property and it's inevitable that governments will regulate property rights. He said it would be better for the federal government to establish uniform privacy standards than to allow states to create a patchwork of laws.

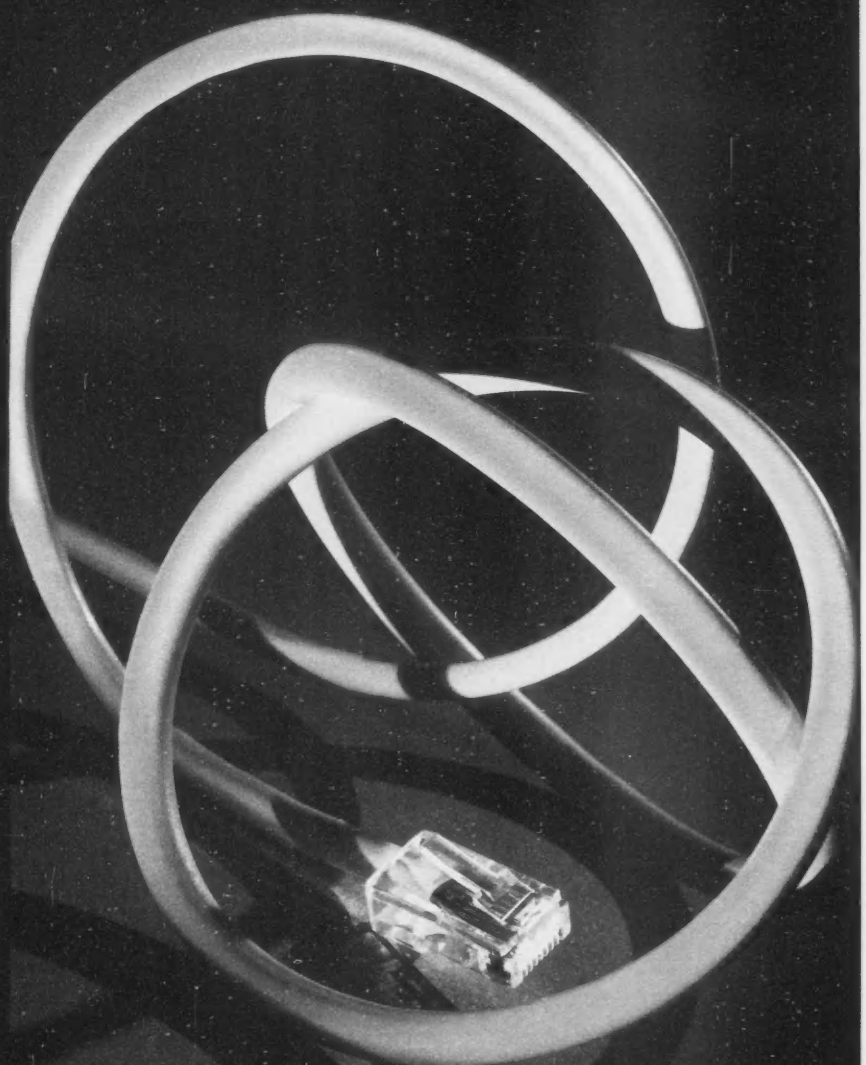
ANDREW GROVE: "I don't think electronic commerce needs federal or state subsidies, in terms of tax advantages"

Forrester Research Inc. in Cambridge, Mass., recently predicted that Congress will pass online privacy legislation next year. Gates said that Congress may want to create stricter privacy rules for medical and financial records but otherwise should take a "cautious approach" to regulating Internet privacy.

Republicans and Democrats currently are squabbling over legislation that would raise the cap on H-1B visas for foreign IT workers. Grove recommended a comprehensive, long-term program for addressing the high-tech industry's labor shortage, including putting more emphasis on science and math education.

"I'm very thankful for the short-term relief of the H-1B program. But it's like bailing out the [sinking] boat with a little cup," Grove said.

Other executives at the two-day hearing included Carly Fiorina, CEO of Hewlett-Packard Co.; Carol Bartz, CEO of Autodesk Inc.; John Warnock, CEO of Adobe Systems Inc.; and Jay Walker, founder of Priceline.com Inc.



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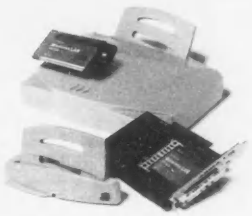

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Continued from page 3

GE, Cisco Team

trol machines and processes.

But it's unclear to some corporate users and industry analysts whether there's really a missing link between the office enterprise and the controls on factory floors and plant process systems. And even if network connectivity between the blue- and white-collar domains exists, some wonder if pulling Ethernet cable from one to the other is really what's needed.

"Wires we've got," said John Dettenwanger, CIO at Cessna Aircraft Co. in Wichita, Kan. What Cessna really needs, he said, is more standardization between computer-aided design systems and automated machine tools.

Harry Tse, a vice president and analyst at The Yankee Group in Boston, also said Ethernet is already on the shop floor. What Cisco may be trying to do, he said, is to make it more robust in the factory space.

GE AND CISCO have joined forces to connect enterprise office systems to plant systems

Another analyst, Stan Schatt at Giga Information Group Inc. in Cambridge, Mass., said many factories are already upgrading to Ethernet from proprietary networks that may run at only 1M to 2M bit/sec. The latest incarnation of Ethernet, Gigabit Ethernet, can transport data at up to 1,000M bit/sec. And 10 Gigabit Ethernet is on the way, perhaps by year's end, according to Schatt.

Higher Ethernet speed for process control data is good news for Bob Gauthier, a systems engineer at petroleum refiner Cenex Harvest States Corp. in St. Paul, Minn.

Gauthier uses GE's process logic controllers to collect data from valves and pumps on a 300-mile Cenex pipeline and transmit the data through Cisco switches to a central console in Laurel, Mont.

Although the big players in factory and plant systems control, such as Siemens Energy and Automation in Alpharetta, Ga., and Rockwell Automation in Milwaukee, claim that they aren't worried about the formation of GE Cisco, the development did make them sit up and take notice.

Mike Spear, manager of information technology plant solutions at Siemens, said Cisco is "focused on connectivity. But everybody has Ethernet in their factories." Enterprise applications, including SAP, have standard interfaces, he noted, as do newer process control systems that use Microsoft Corp.'s OLE to connect applications. The real connectivity need, according to Spear, is middleware that brings the two together.

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Tech Data

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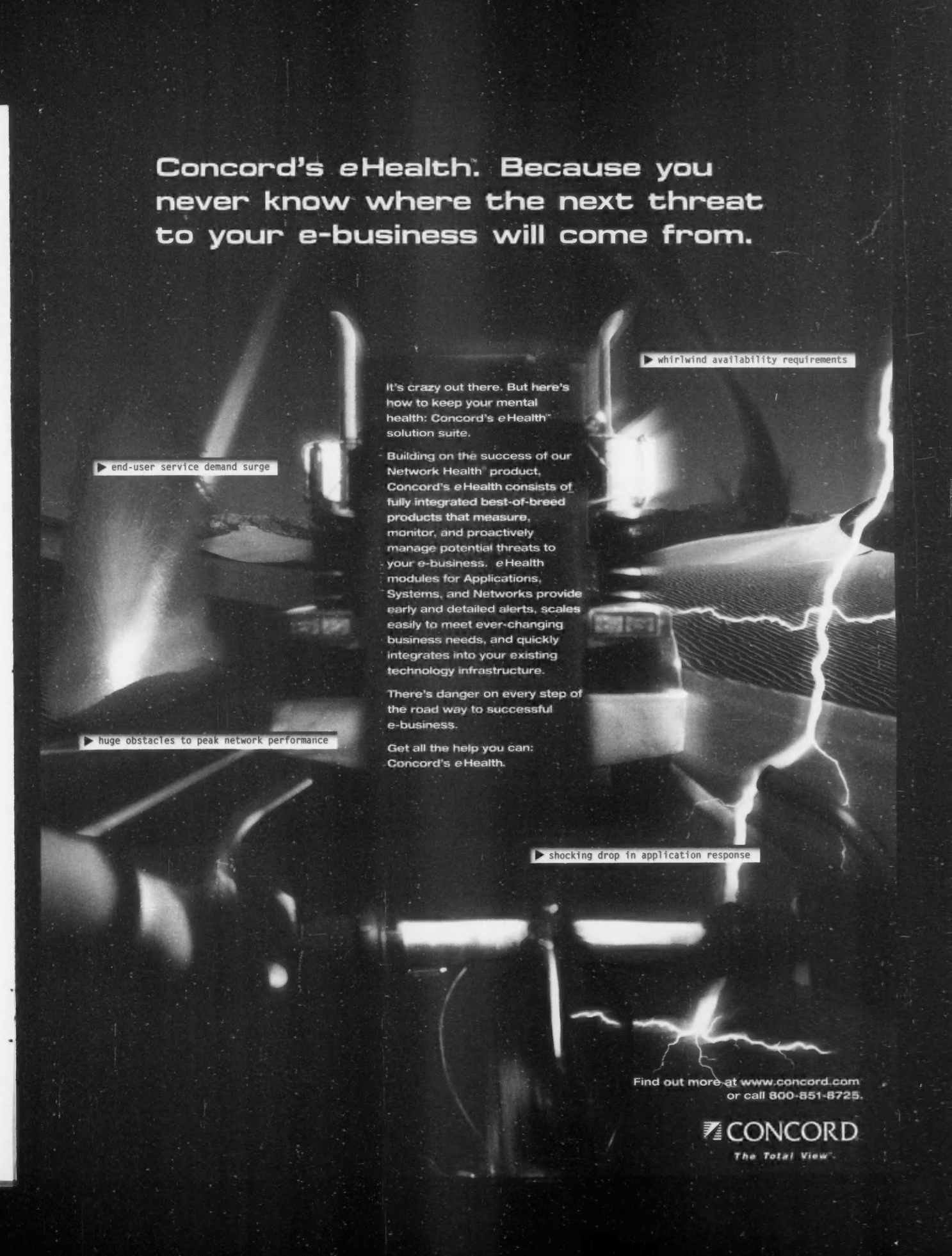
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Continued from page 3

Wireless Virus

searchers at laboratories operated by both AT&T Corp. and IBM independently confirmed its existence. They also warned of the potential of even more serious assaults on the booming global wireless infrastructure, which will support 2 billion mobile users worldwide by 2003, up from 400 million at the end of last year, according to Schaumburg, Ill.-based Motorola Inc.

David Chess, a member of the research staff at IBM's Thomas J. Watson Research Center in Yorktown Heights, N.Y., said that as smarter devices such as handheld computers from Santa Clara, Calif.-based Palm Inc. get hooked into wireless networks, the potential danger from viruses will increase.

"There's no way to get a program to [existing] cell phones. But when you get more powerful machines that can be programmed, the closer you get to the edge of vulnerability," he said. "And the more networked [smart devices] become, the greater the threat of attack."

Steven Bellovin, a network security researcher at AT&T Laboratories in Florham Park, N.J., said that "there was nothing surprising" about the so-called Timfonica virus, since it was based on "standard hacker tools. ... This is a very easy thing to do."

Devices such as the PalmPilot currently lack any defense against this kind of attack, Bellovin said.

"The Palm was not built to defend against hostile programs. It was built on programs that trust one another," he said.

Preventive Measures

A spokesman for Palm said last week that the company hadn't received any reports of viruses on its products. "Even if a virus did exist, the distribution would be much more limited than a PC virus, based on the way the Palm OS works," the spokesman said.

"We understand, though, that any electronic platform can be susceptible to the hackers who create viruses, and we and our partners are already taking steps to ensure that any attempts at viruses on Palm handhelds are intercepted and avoided to the best extent possible," he added (see story at right).

Ken Dulaney, a mobile computing analyst at Stamford, Conn.-based Gartner Group Inc., said mobile device viruses pose an even greater threat to enterprise computing systems than to PCs because of the sheer number of wireless devices that could be hooked into corporate information systems.

That point isn't lost on users.

Tom Zywicki, director of systems development at Seattle-based Airborne Freight Corp., which is in the process of rolling out a nationwide wireless data network, said he has concerns about any virus that could disrupt operation of the company's dispatch system. Zywicki said he would like to see antivirus security built into the wireless dispatch network for Airborne's drivers.

U.S. wireless carriers increased their vigilance against viruses last week, though they refused to provide specifics.

AT&T Wireless Services Inc. in Redmond, Wash., beefed up its virus countermeasures in the wake of the Timfonica virus, according to a spokesman, who declined to provide any details because of security concerns.

Virus Protection For Palm Readied

In a move a Palm Inc. spokesman described as "totally unrelated" to news reports of the vulnerability of wireless devices to virus attacks, Symantec Corp. in San Mateo, Calif., last week announced the development of an antivirus product for the Palm OS operating system.

Symantec, which sells the widely used Norton AntiVirus program for PCs, said it has developed technology that uses a "microengine" to detect threats to the Palm operating system. Because of the smaller memory and storage requirements of handhelds, Symantec said, it's investigating ways to eliminate the use of large virus definitions in antivirus products that run on larger platforms.

"Although there are no known computer virus, worm or Trojan horse threats targeting handheld devices, the Palm OS is susceptible to malicious code like other mainstream computing platforms, since it runs a variety of programs," a Symantec spokesman said.

Symantec was unable to say when the product would be available. – *Bob Brewin*

Continued from page 3

Fulfillment

Ting Piper. Retailers, in particular, are expanding their focus beyond purely glitzy front ends with spinning 3-D models and other bells and whistles to concentrate more on the nuts and bolts of inventory and order management, which the companies are in turn farming out to experts.

"We didn't even consider doing it internally, because we were very focused on speed-to-market, which is critical in the dot-com world," said Ned Crosby, vice president of operations at MuseumCompany.com in Charlottesville, Va.

Instead, Crosby said, it hired Columbus, Ohio-based SubmitOrder.com because of the order fulfillment firm's "depth and breadth of technology to provide the complete back-end operations."

Retailers "realize it's easy for consumers to click around and buy but that it's hard for Web-based stores to deliver at clicking speed," Piper said. Sometimes, the problem is a lack of integrated back-end systems; in other cases, it's the absence of such systems altogether.

That's where SubmitOrder, Copera and Cupertino, Calif.-based Electron Economy's integrated IT infrastructures come in.

Copera, for example, relies heavily on XML technology to integrate incoming purchasing and order data from its current client base of six digital marketplaces to its own warehousing, payment processing, order tracking and transportation management systems.

Copera processes about 1,000 transactions per day, providing companies with real-time visibility to their inventories and the status of Web-based orders.

Customers pay $25,000 to $75,000 to tie into the Copera system, depending on how many services — such as financial management, customer service and transportation — they use. It's a process that Copera said usually takes about six weeks to complete.

Electron Economy provides an integrated e-commerce operations infrastructure and operates as an application service provider. Its customers use Java-based software to transmit orders over the Internet, which are then converted to XML-based documents and processed by partners, such as Redwood City, Calif.-based Kana Communications Inc., an online customer service company. All of Electron Economy's partners are linked over a secure extranet known as the Internet Transaction Operations Network.

All three electronic-fulfillment companies are projecting double-digit growth this year, as more consumers go online to buy and corporate customers begin to procure goods at business-to-business exchanges.

"Until someone can move atoms on a T1 line, all of these goods will have to be moved," said Alan Clingman, chairman and co-founder of Copera.

Getting It From Here to There

Company: Electron Economy.com Inc.
Location: Cupertino, Calif.
Services: Consulting and fulfillment services from a variety of specialist partners linked over a single, integrated transaction network

Company: Copera Inc.
Location: White Plains, N.Y.
Services: Warehouse management, inventory replenishment, order processing, call center management, transportation services for business-to-business digital marketplaces

Company: ReturnCentral.com
Location: Pittsburgh
Services: Sells Web-based reverse supply-chain software for managing the return of goods bought online

Company: SubmitOrder.com Inc.
Location: Columbus, Ohio
Services: Warehouse management, inventory replenishment, order processing, call center management, transportation

Firewall Found Vulnerable To Denial-of-Service Attacks

BY ANN HARRISON

A security researcher has discovered a flaw in a popular firewall that he says makes the tool vulnerable to denial-of-service attacks. The FireWall-1 product, developed by Check Point Software Technologies Inc. in Redwood City, Calif., can apparently be disabled by bombarding the tool with incomplete fragments of data packets.

Lance Spitzner, a member of the Global Enterprise Security Team at Sun Microsystems Inc., said he discovered the flaw on May 27 while attempting to understand how FireWall-1 handles Internet protocol fragmentation.

Greg Smith, director of product marketing at Check Point, said the company has developed a work-around for the firewall that protects a network from denial-of-service attacks. It is available on the company's Web site (*www.checkpoint.com/techsupport/alerts/ipfrag_dos.html*).

He said a permanent fix for the problem will be included in the release of the next service pack for FireWall-1 later this month.

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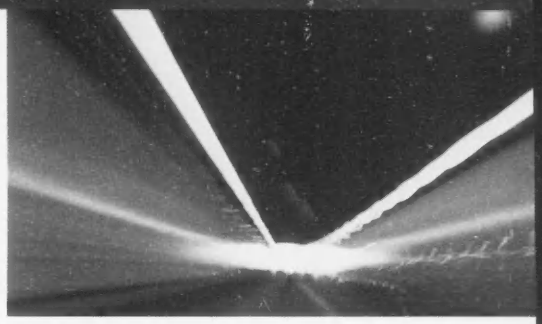

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Continued from page 1

Users Split

of systems and technology at Transamerica Intellitech in Miami, applauded U.S. District Court Judge Thomas Penfield Jackson's breakup order. "It's a good thing, and it's logical," he said. "It's OK to be big, but not to be controlling."

But Benrubi said the company heavily depends on Microsoft software, so a breakup would be no picnic. "It will be two entities, and you'll have to figure out which [one] to call for service and support, which will suffer," Benrubi said.

"I don't expect the breakup of Microsoft to affect our plans in the foreseeable future," said Gary Cooper, vice president of information systems at Tyson Foods Inc. in Springdale, Ark. But he said a breakup would probably mean that the overhead for his back-office staff would double.

John Amos, director of financial services at McKesson HBOC Inc., a health care company in San Francisco, had a pithier reaction to the breakup order: "Oh man, that sucks. Microsoft participated in some anticompetitive activity, but to have one vendor offer the gamut of software [we need is] a great thing."

Amos said he isn't a big fan of Microsoft. McKesson HBOC recently implemented a Web environment based mostly on Microsoft's software and had trouble integrating the Microsoft products with Oracle Corp.'s database, he said. But Microsoft has done "more good than bad," Amos added.

Last month, a *Computerworld* survey of 104 IT professionals found that 46% said a Microsoft breakup would increase their IT purchasing costs. And 22% said the antitrust case would become a factor in their IT planning during the next two years. But most users — 76% of those surveyed — said the case isn't a big factor in their long-term planning.

The antitrust case was filed two years ago by the U.S. Department of Justice and 20 states (one dropped out). After a 78-day trial, Jackson ruled that Microsoft had abused its monopoly position in the PC operating system market. Then the judge turned to the remedy.

Last week he agreed to the breakup plan because, he wrote, "Microsoft as it is presently organized and led is unwilling to accept the notion that it broke the law or accede to an order amending its conduct.

"There is credible evidence to suggest that Microsoft, convinced of its innocence, continues to do business as it has in the past and may yet do to other markets what it has already done in the PC operating system and browser markets."

Besides the dramatic breakup, Jackson ordered restrictions on Microsoft's business practices (see chart, page 16).

Microsoft has already filed for a stay of the breakup ruling with the District Court. And it will file for an appeal and a stay of the conduct and breakup orders at the appeals court in the near future.

Douglas Ross, an antitrust lawyer at Davis Wright Tremaine LLC in Seattle, said the appeals court is likely to approve a stay of six to 12 months. But there remains a possibility that conduct remedies will be in force during the appeal, he said, even if the breakup plan is put on hold.

Vigorous Appeal

Bill Gates, Microsoft's chairman and chief software architect, said the company will vigorously appeal the rulings and expects to get Jackson's rulings overturned. "This is clearly the most massive attempt at government regulation of the technology industry ever, and it was conceived by the government and imposed by this ruling without a single day of testimony or scrutiny," Gates said in a statement.

While Microsoft called the decree extremist, Joel Klein, assistant U.S. attorney general for antitrust, said the remedy "is fair, and it's measured."

Microsoft repeatedly used Windows "to eliminate threats posed by cross-platform products," Klein said. The divestiture will give the applications company "every incentive" to produce cross-platform products, including Office, for other operating systems, he said.

The DOJ wants to appeal the case directly to the Supreme Court, bypassing the U.S. Court of Appeals, to get a speedy resolution. But analysts aren't sure the high court will agree to accept the case.

"The Supreme Court doesn't like these direct appeals. They come up with a messy record, with no refinement of the issues and no assistance from the Court of Appeals," said Harvey Saferstein, an attorney at Fried, Frank, Harris, Shriver & Jacobson in Los Angeles.

But the justices could accept the expedited review if they're convinced that it's a super-important case that needs a fast decision. "The real question is whether they see a need for speed. And they may not be convinced that there's any need for great speed, especially if there's a stay of the entire order," Saferstein said.

Continued from page 1

Legal Distraction

crosoft to change its spots.

"I think Microsoft . . . decided the mistake IBM made was to worry about the legal side first," said Douglas Ross, an antitrust lawyer at Davis Wright Tremaine LLC in Seattle.

"I think Microsoft has decided to focus on the business. But this is part of what Judge Jackson found so troublesome: Microsoft pretending [the antitrust case] is not an issue," said Michael Silver, an analyst at Gartner Group Inc. in Stamford, Conn.

Slower Decisions

At the very least, Microsoft will have to take into account the legal impact of key business decisions, said Jamie Lewis, an analyst at The Burton Group in Atlanta. "It will add a layer of decision-making to their process, so there will be some slowing down, no matter how much they deny that," Lewis said.

Microsoft vows that won't happen. Spokesman Jim Cullinan denied that product decisions would be influenced by legal considerations. "The people who decide what features we add to our products are our customers," said Cullinan.

He also dismissed speculation that Microsoft might voluntarily adopt some changes in business practices — possibly as a show of good faith toward the Court of Appeals. "We don't believe Microsoft broke the law," Cullinan said. "That's why we're appealing."

"The critical near-term issue is whether the appeals court will stay the behavioral restrictions during what could be a one- to two-year appeal process," wrote Bill Epifanio, an analyst at New York-based J. P. Morgan Securities Inc., in a research note issued last Thursday. Although the investment banking firm expects Jackson's ruling to be largely overturned, it also said the behavioral remedies could have an "extremely negative" effect on Microsoft's sales.

The issue is that, while the clock for the breakup won't start ticking until after the appeal runs its course, the conduct remedies will go into effect in 90 days. Among those measures: Microsoft can't bind middleware products to Windows without offering an otherwise identical operating system without the new addition and at a lower price.

This would be a problem for James E. Barry Jr., CIO at Last Minute Integrators LLC in Beverly, Mass. The fact that Microsoft products are so tightly integrated is a positive aspect for him because it has kept costs down, Barry said. With a breakup, it may not be as easy to ensure that the products he chooses will be as tightly integrated, which may mean higher operating costs and more complexity.

The anti-integration remedy would also directly affect new features for Whistler, the next iteration of Windows 2000, due late next year, said Silver. Potentially more harmful would be delays in key technologies such as Digital Dashboard, DNA 2000 and Next Generation Windows Services. Two other provisions could negatively affect Microsoft: the ban on exclusive deals and the loss of control over the Windows start-up screen.

Microsoft has said it will seek a stay of all remedies, including the conduct remedies, claiming that they amount to a "confiscation of our intellectual property." If it is successful, most observers expect Microsoft will be able to concentrate on its business. "They will go on the way they have for the last year," said Silver.

But that doesn't mean the company will be unaffected. "The toll on executive time will be significant," predicted industry analyst Sam Albert, president of Sam Albert Associates in Scarsdale, N.Y., and a 30-year veteran of IBM.

Other employees would also be affected.

"Who will want to sign on with a company with a publicly discussed, uncertain future while the appeal process drags on?" said John A. Challenger, CEO of outplacement firm Challenger, Gray & Christmas Inc. in Northbrook, Ill. "Microsoft recruiters from now on will operate at a huge disadvantage.

"Recruiters will plant and replant uncertainty in the minds of the Microsoft workers whom competitors desire the most," Challenger predicted.

Under the court order, Microsoft employees will have to sign a document certifying that they understand the rules of the order. A Microsoft court filing said that its employees — "many of whom are engineers accustomed to precision" — would be unable to certify that they understand the rules, because the document is "unintelligible." The result might be resignations, the filing added.

Painful Process

Matters could become much worse if the breakup process is started. Some fear it could virtually halt product development while Microsoft attempts to extricate components from Windows. "Things will just stop," said Bill Brong, supervisor of technology development at utility PPL Corp. in Allentown, Pa. "[The company] will take a long time to pull apart, and the support is what it is — it's not great to begin with."

Lewis said the effort of separating applications from the operating system will be hard to complete in the 12-month period foreseen by the breakup plan and that the effort is certain to upset product development. Breaking out products like Internet Explorer 5 and Component Object Model+ will prove troublesome, Lewis said, because they're tightly integrated with the operating system.

Computerworld staff members contributed to this report.

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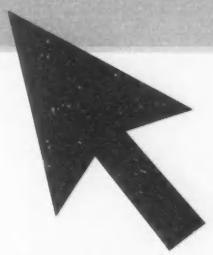

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Breakup Ruling May Be Overturned

Legal analysts say Microsoft lost first round because of credibility problem

BY MITCH BETTS

BREATHTAKING. That's the word one lawyer used to describe the ultimate antitrust enforcement tool: chopping a business into pieces.

In the usually cautious world of antitrust law, a company breakup is the harshest penalty and one judges don't approve lightly.

ANALYSIS

Indeed, a key issue of the appeal is whether the District Court in the Microsoft Corp. antitrust case amassed enough evidence that a breakup is justified, that it will fix the illegal conduct and that it won't harm consumers.

U.S. District Court Judge Thomas Penfield Jackson, in his written opinion last week, said he reluctantly agreed to the two-way breakup — on top of business conduct restrictions — because conduct restrictions alone wouldn't restrain Microsoft's killer instincts.

The clearly perturbed judge wrote that "Microsoft has proved untrustworthy in the past," missed its opportunity for a more favorable settlement, still insists that it did nothing wrong and shows no signs of voluntarily changing its behavior in the future.

After reading the harshly worded opinion, several legal analysts said Microsoft lost this round of the case because Jackson no longer trusted Microsoft to act in good faith.

"It wasn't [Microsoft's] arrogance as much as [that] he didn't trust that what they were telling him was the truth. And that tainted his view of their witnesses, their pleadings and the remedy," said Harvey Saferstein, an attorney at Fried, Frank, Harris, Shriver & Jacobson in Los Angeles.

For example, Jackson's ruling that Microsoft engaged in anticompetitive behavior was based largely on the fact that assertions by Microsoft witnesses were contradicted by Microsoft e-mail messages, noted Stephen D. Houck, formerly lead trial counsel for the 17 states in the case and now at Reboul, MacMurray, Hewitt, Maynard & Kristol in New York.

"He's had experience with them before trying to fashion conduct relief, and they tried to evade it. In [an earlier proceeding], he'd ordered them to produce a version of Windows without the Web browser and they produced one that didn't work. I don't think he was very happy about that," Houck said.

But Hillard Sterling, an attorney at Gordon & Glickson LLC in Chicago, said Jackson's approach was unfair. "Microsoft has every right to forgo a settlement and roll the dice in the litigation process," he said. "It is unreasonable for Judge Jackson to scold Microsoft for showing insufficient remorse."

Experts said the conduct remedy (see chart) is fairly straightforward and might survive the appeals process, albeit with modifications.

May Not Stick

But they said the breakup section is in danger of being overturned, either because Jackson didn't gather testimony on its merits [News, June 5], because it's viewed as too radical or because there isn't a clear link between Microsoft's violations and a breakup.

The Court of Appeals and the Supreme Court "may view it as too harsh and they may reverse that, or it may taint their view of the other part of the case, because there is a mild disconnect between the case and the [breakup] remedy," Saferstein explained.

Microsoft's executive vice president for law and corporate affairs, Bill Neukom, has vowed to base his appeal on all of those points and more, saying the judge made numerous legal, factual and procedural errors. "We believe the proceedings in the District Court were flawed from the beginning and strayed further and further off course, both procedurally and substantively, as the case progressed," Neukom said.

"Microsoft may have taken it on the chin in trial court, but it's the favorite to win on appeal," said Kent Meyers, a law professor at the University of Oklahoma in Oklahoma City.

The case has "a serious crack in the foundation," said Sterling.

"The appellate judges will focus strongly on Judge Jackson's failure to find real anticompetitive effects," Sterling said. "There's no evidence that any competitor was effectively blocked from entering or competing in a market."

Patrick Thibodeau contributed to this report.

So What Happens Now?

Jackson's ruling defined the steps to be taken to manage the split of Microsoft into two businesses:

ACTION	SUMMARY	EFFECTIVE DATE
Judgment entered	U.S. District Court Judge Thomas Penfield Jackson orders Microsoft to be split into two parts: operating systems business and applications business. The companies must "preserve, maintain and operate" businesses as "separate, distinct and apart."	June 7, 2000
Status report	Microsoft must submit report on steps taken to comply with judgment.	90 days*
Establish compliance committee	Group of three or more people who aren't current or former Microsoft employees will form committee and hire a chief compliance officer (CCO) to ensure judgment is followed and antitrust laws are obeyed.	90 days*
Maintain e-mail	CCO will keep e-mail from "officers, directors and managers" relating to software development and marketing and developer relations.	For 4 years
Plan for divestiture	Microsoft must submit plan to break up company.	4 months*
Objections to plan	DOJ and 17 states must file objections to Microsoft's plan.	60 days later
Response to objections	Microsoft must submit its responses to government objections.	30 days later
Completion of divestiture	Microsoft's plan to split company as approved by the District Court, DOJ and 17 states.	12 months**
Duration of judgment	Period during which the operating systems business and the applications business are forbidden to merge and during which the court may impose additional orders or restrictions.	10 years

* From when judgment was entered ** After appeals process is complete

James E. Barry Jr., CIO, Last Minute Integrators LLC
"It won't change who we buy from, but it will add another layer of complexity, one that is probably unnecessary. As positive as the Justice Department may think this is for consumers, we have seen no negative impact from Microsoft as it is."

Ed Toben, CIO, Colgate-Palmolive Co.
"At a certain level, it has to be taking [Microsoft's] eye off the ball. They might be saying it is business as usual, but this is a very unusual event."

John Sheridan, executive director, InfoTest International Sector
"I don't think it will be easier or harder; it will just be different. It seems that the result is that they all end up in some third place that no one ever thought about."

Gary Cooper, vice president of information systems, Tyson Foods Inc.
"I don't expect the breakup of Microsoft to affect our plans in the foreseeable future. It isn't obvious to me that Microsoft needs to be split up."

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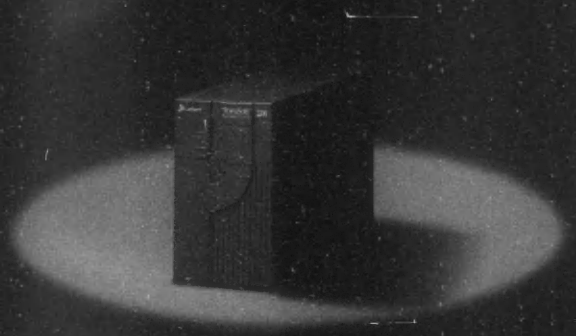

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Windows 2000

What is Windows 2000 Advantage?

Windows 2000 Advantage is the partnership among Microsoft, Compaq and Computerworld Enterprise Business Solutions to inform IT leaders about Windows NT and Windows 2000 technology by providing timely, useful information — in print and online — for planning and deploying Windows NT and Windows 2000 with Compaq services and solutions.

Online This Week

Windows 2000 proves its reliability

Users are going for Windows 2000 as a server platform that offers the same price performance advantages as Windows NT, but with greater reliability and manageability, says Joseph Clabby, vice president, platforms and services at Aberdeen Group. "I will say that I'm surprised it took off so quickly," Clabby declares.

Compaq ProLiant 32-way server delivers partitioning and exceptional performance on an industry-standard platform

The 32-way servers Compaq is slated to release later this year represent at least two firsts for the company: A ProLiant server with more than eight processors and support for server partitioning.

Testimonials suggest Windows 2000 is ready for prime time

As part of our Momentum series, this story shows that there is mounting evidence based on independent lab tests and user installations that Windows 2000 is an enterprise-ready operating system that offers equal parts scalability and reliability.

Quickpoll **Do you feel that Compaq's iPAQ is a good client platform for Windows 2000?**

Cast your vote now at

www.Windows2000Advantage.com.

Check out the current results:
Base: 86 ▶

Microsoft

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ENTERPRISE BUSINESS SOLUTIONS

Comparing Windows 2000 Server Versions

By Bob Williams and James Morris

In this article, we explore the three server versions in the Windows 2000 product family and where they best fit within different computing environments. Windows 2000 Server versions solidly secure Microsoft's place in the enterprise. Responding to perceived shortcomings of Windows NT, Windows 2000 is built for industrial-strength reliability and manageability. Taking the best features from Windows NT, Microsoft has added a slew of new features to Windows 2000. These features vastly improve uptime, scalability and administration of the Windows Server family.

Windows 2000 Server, Advanced Server and, coming later this year, Datacenter Server. All three products include the same core set of features and functionality, with the emphasis being on reliability and manageability. Advanced Server adds support for more RAM and processors, two-node clustering and network load balancing. Datacenter Server adds support for even more RAM and processors and up to four-node clusters.

Perhaps the most distinctive new feature of Windows 2000 Server versions is the standards-based Active Directory service, which provides a rich enterprise directory service and the basis for many of the management improvements. Additionally, the Active Directory includes a number of programmatic interfaces that make scripting basic tasks much easier. (See March and April issues for technical reviews of Active Directory.)

The Windows 2000 Server family brings to information technology managers a single point of administration, management and security for resources throughout the enterprise. This includes the management of users, printers, file services, devices, databases, DNS and more. Administration can easily be delegated, allowing managers to give up only as much control as necessary to let their staffs do their jobs. Microsoft has also integrated Terminal Services into each of the Windows Server family products. As discussed in the April issue, two administrative licenses are included with each server. This facility makes remote administration simpler.

Windows 2000 Server is the workhorse of the family. Microsoft defines this version as "the multipurpose network operating system for businesses of all sizes." It is well suited for basic services such as file, print or communications. Windows 2000 Server is a reliable operating system and lacks none of the key features of the Windows Server family. It is ideal for use in small businesses as an intranet server, file and print server or communications server.

For the full text, visit **www.Windows2000Advantage.com.**

AT A GLANCE

Windows 2000 Server Family

Windows 2000 Server
- Scales to up to four processors
- Up to 4G bytes RAM
- Available now

Advanced Server
- Scales to up to eight processors
- Up to 8G bytes RAM
- Two-node clusters
- 32-node network load balancing
- Available now

Datacenter Server
- Scales to up to 32 processors
- Up to 64G bytes RAM
- Four-node clusters
- 32-node network load balancing
- Multiple OS instance capable
- Process control
- Available this summer

ADVANTAGE

The Web Magazine for IT Leaders Implementing Windows NT and Windows 2000 with Compaq Services and Solutions

▶ Feature

Users gaining unprecedented remote access capabilities

By Mary Ryan Garcia

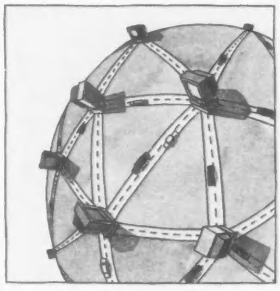
Compaq's new Remote Insight Lights-Out Edition board gives IT administrators round-the-clock access to their servers, regardless of location.

Imagine visiting Denmark on business and being able to remotely manage network servers at your company's headquarters in Texas. Does it sound like an impossible task? Not anymore.

Russ L. Deer, a network analyst with Pacific Life, is one user who is now doing what formerly was so difficult. His experience is described below.

According to Aman Dokania, Compaq product marketing manager, industry standard server division, Compaq's new Remote Insight Lights-Out Edition board gives IT administrators round-the-clock access to their servers, regardless of location. The product, a LAN-only version of the Compaq Remote Insight Board/PCI, provides full remote control of hardware and operating systems through a client browser. It is designed to be used at data centers or at distributed locations that have no IT staff on-site. Compaq Remote Insight Lights-Out Edition has its own dedicated processor, memory, NIC and comes with an external power backup through an AC adapter.

"Remote management tools are a survival issue for companies with distributed servers in small locations that can't justify remote support personnel," says John E. Girard, vice president and research director, with the Gartner Group's Research Advisory Services in Stamford, Conn. "Sometimes in the past it was enough to ask someone to hit the power switch, but systems today are too complex to be fixed so simply and downtime in a realtime business world causes substantial loss of money. Dead or malfunctioning systems frequently can't be accessed via a network, meaning that direct access to the screen and keyboard are essential."



One increasing problem, explains Girard, comes from the growth of the server hosting market. It might seem like an ideal solution for dealing with systems, but companies that utilize hosting opportunities sometimes discover that the service provider does not want to offer them direct access to systems and the secured rooms hosting the servers, for reasons including the maintenance of a high degree of physical security and privacy for all of the hosted systems.

"However, the users can do proper maintenance and upgrades without direct console access, especially if the server decides to stop working," he observes.

Enter Compaq's Remote Insight Lights-Out Edition, which allows browser access to Compaq servers through a hardware-based, operating system-independent graphical remote console. Since it is hardware-based, it does not require additional software or use any host-server CPU cycles. The on-board graphical remote console capability turns the client browser into a virtual desktop, no matter what operating system the host server is running or where the server resides. The product also includes additional features, such as a virtual power button, DNS/DHCP IP auto-configuration, and ROM-based configuration capability.

According to the company, Compaq Remote Insight Lights-Out Edition may be used to deploy a "headless" server that does not require a monitor, keyboard or mouse. If Compaq Remote Insight Lights-Out Edition is deployed in every server in a rack, it is possible to eliminate these devices as well as the switchbox and associated cabling.

For the full text, visit www.Windows2000Advantage.com.

Point of View

The 2000 Generation: BackOffice Server 2000 targets medium businesses

By Nora Isaacs

When building a corporate IT infrastructure, various businesses, departments and branches have a unique set of needs. BackOffice Server 2000, Microsoft's latest in its 2000 Generation series of server suites, will meet those needs by providing tools and services for building a solid information technology foundation.

Scheduled to be introduced by year's end, the integrated suite includes individual Microsoft server application components and the Windows 2000 operating system. This mix enables easy setup, deployment and suite management, which ultimately reduces the cost and complexity of managing scalable IT solutions.

"BackOffice Server provides value-added features on top of the individual server application components and binds them together," says Joel Sloss, product manager for BackOffice Server. "It's more turnkey than if you were having to take all the stand-alone application separately and build it all yourself."

Integrating BackOffice Server with Windows 2000 produces enhanced scalability, reliability and manageability. Empowered by Windows 2000, BackOffice Server comes with all the benefits of Windows 2000 Server and the most up-to-date server applications: Exchange 2000 Server, SQL Server 2000, Host Integration Server 2000, Systems Management Server 2.0 with Service Pack 2 and the next release of Proxy Server.

BackOffice Server takes advantage of Windows 2000's Active Directory to integrate applications, users and data. The server's snap-ins for the Microsoft Management Console will host management applications and create customized tools that can then be distributed to other administrators. In addition, Windows 2000 Server combined with BackOffice Server components like Microsoft Proxy Server and Microsoft Host Integration Server 2000 will create a unified network infrastructure for enhanced intranet and Internet performance and replication services.

For the full text, visit www.Windows2000 Advantage.com.

For more inside, hands-on Windows 2000 information, go to www.Windows2000Advantage.com

GO

Online Insurance Site To Cut 40% of Staff

Carrier pullout cited as chief reason for restructuring; brokers cut from loop

BY MARIA TROMBLY

INSWEB CORP., a provider of online insurance services, will cut 40% of its staff and restructure its operations.

Redwood City, Calif.-based InsWeb was dealt a serious blow in mid-April, when State Farm Mutual Automobile Insurance Co. said it would stop selling products through the site, creating a revenue loss of about 30% for InsWeb.

As a result, InsWeb executives last week said they will cut 40% of the company's staff — or about 120 employees — and change the business model away from referring Internet-generated leads to traditional insurance agents. Instead, InsWeb will sell insurance policies directly to customers through its Web site.

The staff cuts and restructuring plans weren't a surprise, said Goldman, Sachs & Co. analyst Michael Hodes.

"They had to respond," he said, adding that InsWeb still has good management and strong cash reserves.

InsWeb "was early with its visions and made a number of innovations and was dealt a serious blow when State Farm decided to pull out of its marketplace," said Hodes.

"We felt it was in the best interests of our policyholders not to renew that deal," said State Farm spokesman Dick Luedke. He declined to elaborate.

However, Luedke added, the Bloomington, Ill.-based insurance company will maintain relationships with other online insurance aggregators, including NetQuote, Quicken Insurance and InsureConnection.

Like InsWeb, these sites allow State Farm to quote prices to prospective customers, then pass leads to traditional insurance agents.

Luedke said State Farm has no immediate plans to sell policies directly online.

InsWeb has nine insurance carriers that allow the company to sell policies directly to Internet customers, said CEO Hussein Enan. Four more carriers are being added and are expected to go live by year's end, he said, though he didn't name the companies.

Although InsWeb's offerings are limited to automobile insurance policies primarily for residents in the western U.S., the company plans to expand to homeowners and life insurance next year. It additionally plans to expand geographically, Enan said.

InsWeb also plans to move its corporate headquarters to Sacramento, Calif., and to eliminate television advertising. ◗

InsWeb Restructuring:

- Business model changes from referring leads to traditional brokers to selling insurance policies directly
- About 120 employees to be laid off
- Headquarters to move to Sacramento, Calif.

SOURCE COMPANY INFORMATION

Schwab, Quick & Reilly Debut Wireless Trading

Brokerage firms expect gradual shift

BY MARIA TROMBLY

Two of the nation's biggest discount brokerages — Charles Schwab & Co. and Quick & Reilly Inc. — launched wireless services last week, targeting the profitable frequent-trader customer base.

San Francisco-based Charles Schwab has about 7 million active accounts, with about 80% of its customers' trades processed via the Internet. Still, the nation's largest online broker doesn't expect a big chunk of its customers to shift to wireless trading right away.

"It's still fairly early," said Schwab spokesman Greg Gable. "But, at some point, it will be fairly significant — we fully expect wireless to become a more and more common way to do all sorts of Internet activities."

Gable said Schwab's wireless services will be available only to users of Research in Motion Ltd.'s (RIM) pager and PalmPilots at first, then to users of Web-enabled phones later this summer.

Schwab tested the wireless services for six months before going live, he added.

By comparison, it took only three months of testing to get Quick & Reilly's service up and running.

Quick & Reilly, a subsidiary of Boston-based FleetBoston Financial Corp., chose New York-based w-Trade Technologies Inc. to provide its wireless services.

According to w-Trade chief technology officer Sergey Fradkov, his company sells off-the-shelf software modules that can connect a brokerage's back-end systems to a wide variety of mobile devices — including PalmPilots, pagers and cellular phones — without having to build the software from scratch.

"Our platform allows brokerage companies and banks to roll out their offerings much quicker," he said.

Quick & Reilly's system was in development for six months, said company spokesman Charles Salmans.

About half of Quick & Reilly's 1.3 million brokerage customers trade online.

"Probably only a small percentage will use the wireless service at the beginning," Salmans said. "But we expect that to grow very rapidly."

He pointed out that online trading went from zero to 50% of Quick & Reilly's trades in just four years.

"This could be a situation where the adoption rate grows very quickly," he said.

But Jaime Punishill, an analyst at Forrester Research Inc. in Cambridge, Mass., said he's skeptical about quick adoption rates for wireless trading.

"Every brokerage in the world can offer it," he said. "But it doesn't change the fact that most customers aren't ready for it."

Fewer than 1% of U.S. households are ready for wireless trading, he said. "This is a solution looking for a problem."

He said a customer has to have investments and Internet access, trade frequently and own a Web-enabled cell phone or a personal digital assistant.

"What you have left is a very small pile of folks," he said. "But for certain active traders, it's very important and that's a very profitable segment. They have high-margin balances, they trade very frequently, they're good customers, and they push the technology envelope." ◗

Wireless Trading

QUICK & REILLY WIRELESS DEVICES SUPPORTED:

- Palm III, IIIx, V, Vx and VII organizers
- Two-way pagers such as the RIM Inter@ctive pager
- Personal communicators such as the Nokia 9000il Communicator
- Cellular phones, including those by Motorola, Ericsson and NeoPoint

SCHWAB WIRELESS DEVICES SUPPORTED:

- Palm IIIx and Vx organizers
- Soon to come: RIM pagers and Internet-enabled mobile phones

SOURCES: QUICK & REILLY INC., CHARLES SCHWAB & CO.

Group Seeks Web Banking Standard

BY MARIA TROMBLY

The Financial Services Technology Consortium (FSTC), a nonprofit organization that includes banks, research firms and government agencies, is planning to meet June 15 to discuss authentication issues for Web sites that aggregate banking information.

The group has already developed what it calls the Financial Agent Secure Transaction model, which allows financial institutions to provide services ranging from customer authentication to payment guarantees. At the meeting, consortium members will further develop the technical model and prepare it for a market trial.

Anatoly Kissen, a vice president at Citigroup Inc. in New York who is evaluating the FSTC's aggregator project, said the main goal of the committee is to stop accessing customers' personal financial information via screen "scraping," which is usually done without banks' permission. The FSTC wants to move to a common, standards-based platform. Kissen said aggregators scrape personal financial information from bank Web pages — not the most secure and reliable approach. "If we provide a direct feed to the aggregators, the quality of the information could be improved," he said.

At the June 15 meeting, financial industry representatives from organizations such as the American Bankers Association in Washington, Bank of America Corp. in Charlotte, N.C., and Citigroup will discuss the details of a pilot project.

The pilot, said Kissen, may not necessarily be a full-scale, XML-based platform, but it may eventually lead to one.

The meeting is a sign that banks and other financial institutions have accepted that aggregator sites are inevitable, said George Barto, an analyst at Stamford, Conn.-based Gartner Group Inc.

"The banks would prefer that this didn't happen, but it did happen," he said. ◗

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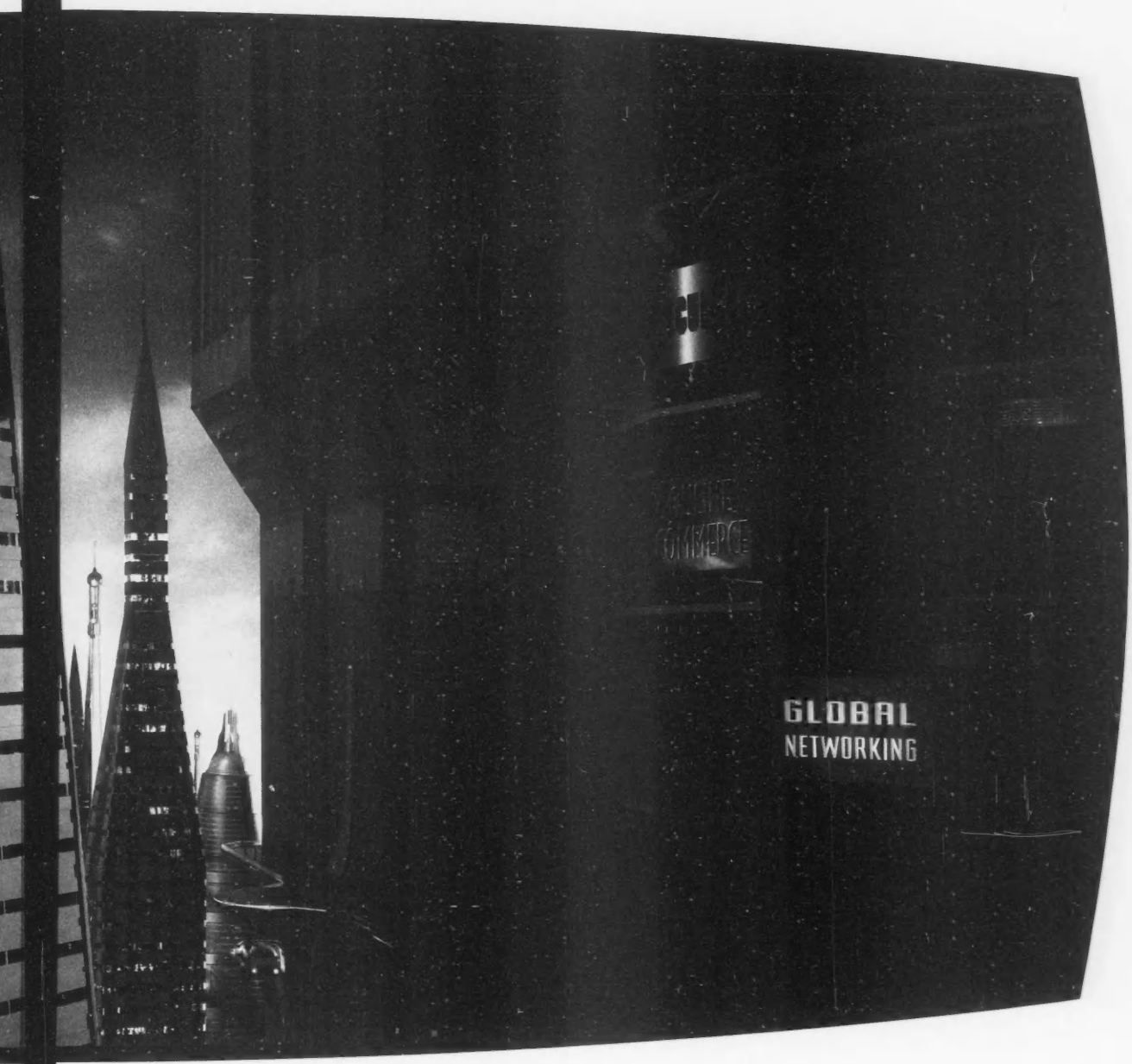

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Innovators Feted With Smithsonian Awards

Technology leaders presented awards for creativity that is benefiting society

BY LINDA ROSENCRANCE
WASHINGTON

AS THE recipients of the 12th Annual *Computerworld* Smithsonian Awards took the stage at the National Building Museum last week, one could almost sense the presence of the people for whom the building was erected: the Civil War soldiers who went to war to ensure the right of every citizen to think and create.

And during the ceremony — which honored individuals, organizations and companies for their outstanding uses of technology to benefit society — modern-day examples of creativity abounded. The winners included the following:

- Professor Mandla Mchunu and the Independent Electoral Commission of South Africa in Pretoria, which used technology to help ensure free and fair elections in that country.
- Devan Shepherd and the National Marrow Donor Program in Minneapolis, which helped improve the chances of cancer victims finding a bone marrow match.
- Dara McCormick Feldman, Bonny Chambers and the Montgomery County Schools in Maryland, which used computers to enhance early childhood education.

The 15 awards spanned 10 categories and included five leadership awards. One went to Max Hopper for his role in creating and developing the Sabre computerized reservations system, which transformed the travel industry worldwide.

As Hopper took the stage, granddaughter Carolyn Wassmer, 4, stood waving a white flag decorated with black dots at her "Papa" to show how proud she was of him. She had made the flag out of materials placed at each table for the assembled guests to create innovative centerpieces.

MOREONLINE
For a full list of winners, visit our Web site.
www.computerworld.com/more

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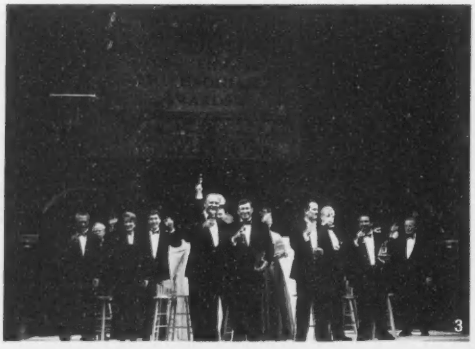
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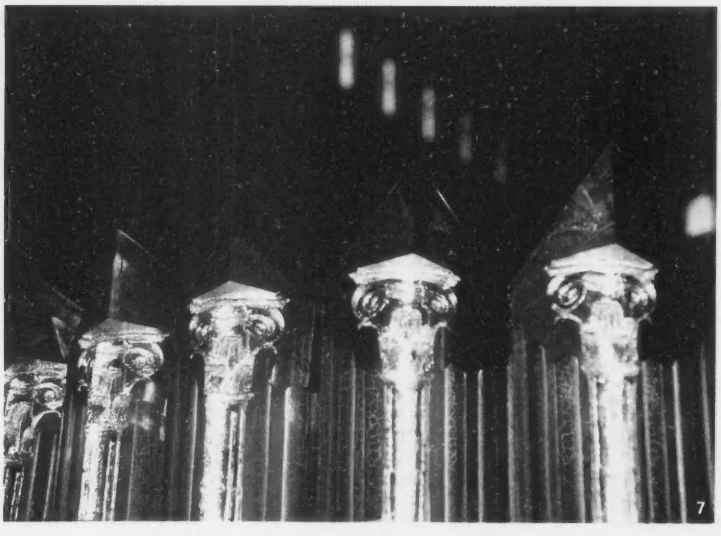
PHOTOGRAPHS BY STAN BAROUH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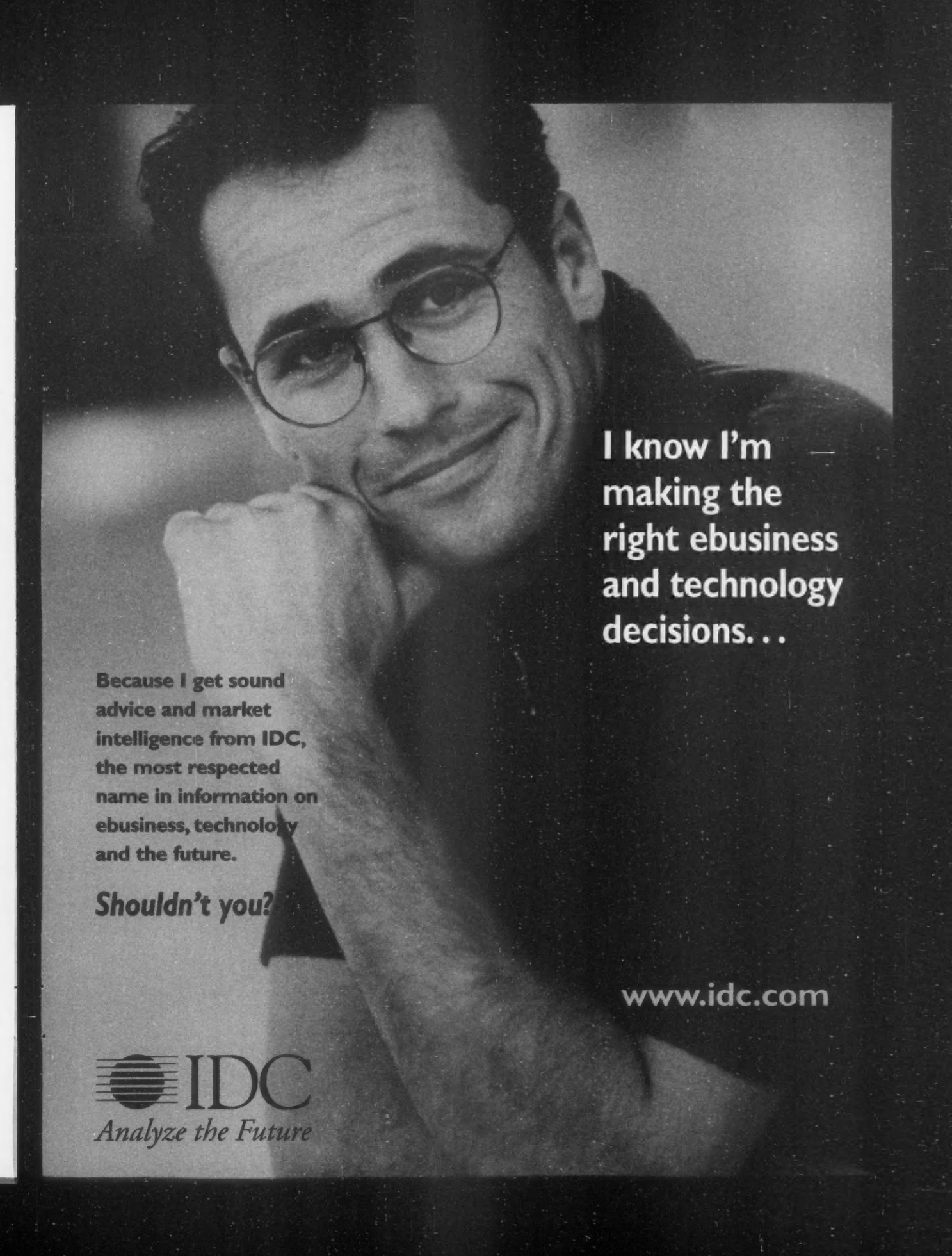
1. Max Hopper receives the J. D. Edwards Leadership Award for Innovation in Action; 2. Intel co-founder Gordon Moore, recipient of the PricewaterhouseCoopers Lifetime Achievement Award; 3. The Leadership Award recipients; 4. Devan Shepherd (left) and Paul Zyla accept the award for innovation in medicine for the National Marrow Donor Program; 5. Dr. Brigalia Bam, chairman of the Independent Electoral Commission of South Africa, accepts the award for innovation by a government/nonprofit organization; 6. Dara McCormick Feldman (left) and Bonny Chambers of the Montgomery County Schools in Maryland receive the Education and Academia Award for using computers to enhance early childhood education; 7. This year's *Computerworld* Smithsonian awards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Sun Shifts Storage Strategy to Midrange

BY KATHLEEN OHLSON

Sun Microsystems Inc. is counting on a shift to the midrange to jump-start a storage effort that some users and analysts said needed a push.

The company will announce the T300 storage system, codenamed Purple, on Wednesday, according to sources.

Purple is a modular Fibre Channel disk array that will be implemented in storage-area network (SAN) environments.

Analysts said the announcement marks a shift in Sun's storage strategy from a mainframe focus to a midrange focus. According to Steve Duplessie, an analyst at Enterprise Storage Group in Milford, Mass., Purple is the successor to StorEdge A7000 and other products in Sun's StorEdge A line, which are geared for mainframe and Solaris environments.

Users had mixed reactions to the expected news.

John Amos, director of financial systems at McKesson-HBOC Inc., said Purple could potentially fit into the firm's storage plans if the price is right and if it allows disk arrays to be swapped from one system to another and to be reconfigured in a timely manner.

A San Francisco-based drug distributor and software company, McKessonHBOC currently uses a range of redundant disk arrays from Sun.

Evan Benrubi, vice president of systems and technology at Transamerica Intellitech Inc. in Miami, said he has no plans to deploy Purple, because his firm doesn't need additional storage capacity.

Transamerica Intellitech was the first company to install Sun's StorEdge A7000, said Benrubi. But he said he has been disappointed with Sun's support. The vendor failed to deliver certain functionality, such as fail-over capabilities, and its support has become less personal, he said.

An Improvement

But Purple will be an improvement over the A7000 according to analysts.

"Purple has a better chance than their other storage announcements," said John Webster, an analyst at Illuminata Inc. in Nashua, N.H. "They've thought it through better" on the software front, he said.

Duplessie said Sun has some fence-mending to do.

Purple allows Sun "to get back in the game, but it's burned customers [in the past] with inferior products," Duplessie said, adding that Sun will have to prove to users that it will support Purple.

Sun is also expected to outline its storage strategy and unveil network-attached storage and SAN products for companies ranging from dot-coms to large enterprises.

According to one source, Purple will support both Sun's Solaris and Microsoft Corp.'s Windows NT.

Sun didn't return calls seeking comment.

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IBM Poised to Become Linux Industry Leader

Part of open-source world remains wary

BY DOMINIQUE DECKMYN

THIS WEEK, IBM will announce several Linux initiatives that should help quicken its pace to take a leading position — if not the top spot — among Linux systems vendors.

At an event in New York, IBM will unveil new electronic-business programs and development tools for Linux, as well as a bundle of Linux applications for small businesses. Observers say these moves will deepen IBM's influence while many high-profile Linux companies are faltering on Wall Street because of doubts about their long-term viability.

"IBM is unusual in that it provides the entire range of hardware, software and services to Linux customers worldwide," said Cliff Miller, chairman of San Francisco-based TurboLinux Inc., a major Linux distributor. "In that sense, it brings great credibility to Linux."

IBM is currently No. 2 in Linux server sales, according to International Data Corp. in Framingham, Mass.

Know Your Source

IBM first took serious notice of Linux in the fall of 1998. A task force was formed under Robert LeBlanc, IBM's vice president of software strategy, to see how the company could exploit the emerging open-source phenomenon.

"Part of this early work was understanding how this open-source community works," explained Dick Sullivan, IBM's software group's vice president of solutions and integration marketing.

Jon Prial, who was a member of the task force, said the group was careful to not raise the ire of testy and vocal open-source voices such as Slashdot.org.

According to Pierre Fricke, an analyst at D. H. Brown Associates Inc. in Port Chester, N.Y., "Of all commercial companies, IBM has the closest ties" to the Linux community.

All IBM divisions are offering Linux wares. IBM is selling Intel-based NetFinity servers that are preloaded with Linux and intends to add it to other PC systems, including ThinkPad laptops. The company is also porting Linux to its Power 4 processor, which runs its RS/6000 systems, and recently announced support for Linux on S/390 mainframes.

IBM'S Irving Wladawsky-Berger says the firm sees Linux as a standard

Most important for longtime customers, IBM's Global Services division is offering Linux technical support and consulting. IBM has 400 Linux consultants in the U.S. and Canada, said Katalin Wallcott, a Linux solutions executive at IBM Global Services.

Part of what has driven IBM to embrace Linux is customer demand. "The key point for IBM is that they first and foremost help their customers," said Fricke. "It may be a cliché, but that's what they do. And right now, customers are asking about Linux."

But Irving Wladawsky-Berger, the chief Linux strategist at IBM (see interview, this page), said the company sees Linux as more than just another operating system to sell hardware or services; rather, it's on par with Java, TCP/IP and the Internet programming language HTML as a multiplatform industry standard.

In the Linux market, IBM faces far less competition than in the PC or server markets. Linux "is a wide-open field," Fricke said. "You don't have to fear a competitor who will use the operating system against you. And on the Internet, it's more popular than NT."

Preparing for the Enterprise

Linux also gives IBM a second shot at becoming a player in volume operating systems, said Ransom Love, president and CEO of Linux distributor Caldera Systems Inc. in Orem, Utah. "They have attempted to play in the commodity operating system area before but have failed," Love said. "Linux accomplishes their objective with a fraction of the resources needed to do it themselves."

But even Linux advocates acknowledge that the operating system isn't yet ready for all tasks. Although it runs Web servers well and can scale in "shared-nothing" clusters, it's not as good at transaction processing or handling symmetric multiprocessing systems that have more than four processors.

IBM is working with open-source groups to overcome those deficiencies, Fricke said.

Its Linux Technology Center, led by Daniel Frye, consists of 50 people who contribute to multiple open-source projects.

Proceeding With Caution

"Our mission is to do anything we can to speed up Linux [and] make Linux better for the enterprise," Frye said.

He said he's aware that IBM's sheer size means it has to proceed carefully — many open-source advocates fear the company will attempt to force the community's hand by making a move such as launching its own Linux distribution.

"If they [launch their own Linux], all other major players will follow with their own 'flavor,' and Microsoft will again have an opportunity to come out with their own Linux or new-generation NT," said Love.

Miller said IBM's size may also make the company too slow to do well in the Linux market. "Whether it is nimble enough to be able to execute in this fast-paced Linux world will determine to some extent its place in the future," said Miller. "So far, it has done well."

Across the Board

Some recent key Linux announcements from IBM:

May: Linux for the S/390 is announced.

April: Linux is preloaded on IBM NetFinity Intel-based servers.

March: IBM joins the Embedded Linux Consortium.

February: Linux is supported on Network Station thin clients; IBM offers to contribute Journaling File System technology to open source.

January: IBM announces that all its server platforms will be "Linux-ready," i.e., they will run the Linux operating system or support Linux applications.

November 1999: Lotus Domino for Linux is launched.

August 1999: DB2 for Linux is launched.

March 1999: IBM makes a major Linux commitment, announcing alliances with Caldera Systems, SuSE Inc., Red Hat Inc. and TurboLinux.

Linux: 'Not Just Another OS'

Irving Wladawsky-Berger, *vice president of technology and strategy and a 30-year veteran at IBM, is the company's chief Linux strategist. He recently sat down with* Computerworld's *Dominique Deckmyn to talk about the open-source operating system.*

Q: IBM has long maintained a multiple operating system strategy. But the company has also become something of a Linux advocate.

A: Yes, we still have a multi-operating-system strategy. [But] we view Linux as not just another OS — just like the Internet isn't just another network.

What made the Internet special is that the community collaborated on the standards and built the infrastructure. What we realized about Linux was it wasn't another operating system like S/390 or AIX or Windows. It was more a community coming together to collaborate on application interface standards, on a common application development environment, on a common set of tools. And by virtue of it all being based on standards, we felt comfortable that we can integrate Linux support in all our operating systems.

Q: You describe Linux as a common application environment that plays a role similar to that of Java. How do they relate?

A: Java is one level higher. Java is really a programming environment, a way of writing applications, especially object-oriented applications with Enterprise JavaBeans. But an application still needs to run on an operating environment. And getting an agreement on that operating environment is what Linux can provide.

Getting agreement on standards involves getting agreement on the networking level, which the Internet provides; at the programming level, which Java provides; on the content exchange level, which XML is all about. And now, with Linux, we can start getting agreement on the application interfaces, on the runtime execution environment and on the application development environment. We are looking to Linux to supply the missing ingredient.

Q: How does Linux relate to Monterey, your plan for Unix on 64-bit Intel processors?

A: Linux is a major part of our total Unix strategy. We support two major kernels — AIX and Linux — and they complement each other. AIX is a very mature Unix; it's [the] highest-rated Unix, from a technical point of view, and it's very good at transaction processing. Linux is the most popular and fastest-growing Unix in the industry and the best for high-volume applications. It's most popular on one- to four-way PCs and on appliances. We want to make AIX API-compatible with Linux, which means you can put an application on AIX with minimal effort.

MARK HALL

Daytime TV justice

JUDGE THOMAS PENFIELD JACKSON thinks he's played Solomon by splitting Microsoft into an operating systems business and an applications business. But it seems more like Judge Judy to me.

As I've argued in this space before, Microsoft's PC operating system monopoly is becoming less and less relevant as Linux, handhelds and server-centric computing make desktop issues so, you know, 20th century. Applications, however, are as modern as ever, and the court has just sanctioned the creation of a much more powerful monopoly.

MARK HALL is *Computerworld*'s West Coast bureau chief. You can contact him at mark_hall@computerworld.com.

If anything, Microsoft's PC operating system dominance has held back its applications group by forcing the company's developers to build products with Windows in mind. Now they'll be free to go after every other platform with equal zeal.

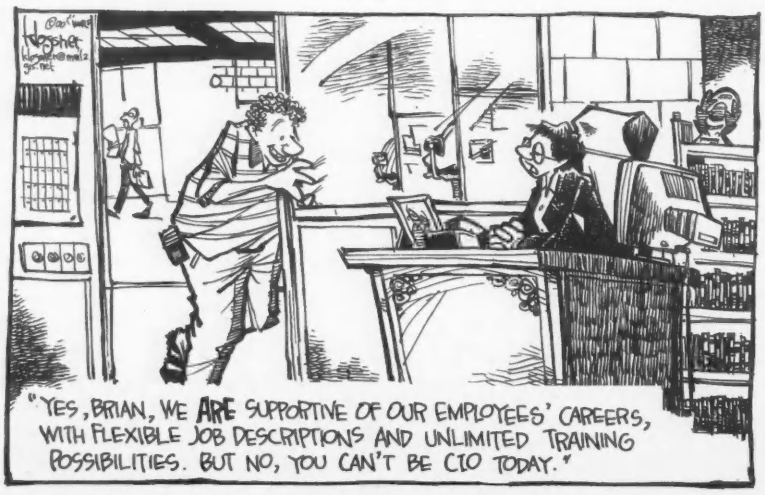
Look at Microsoft's one effort to go cross-platform: Microsoft Office on the Mac. Less than five years ago, there was real competition for productivity software on Apple's operating system. Now the platform is dominated by Word, Excel and even PowerPoint, which proves that the applications business won't be shackled by its Windows roots once its internal restrictions have been lifted.

IT managers who once hesitated to deploy Linux or Sun Solaris servers for certain applications will feel fine about doing so if they can run BackOffice, Internet Information Server, Office or other software from the new applications business. Any hope for competing software on these platforms won't stand a chance.

To be fair, there could be an upside to this for IT managers. And that's with SQL Server, which Jackson has lumped in with the applications business as, oddly enough, "middleware." Right now, you can get Microsoft's database only with its operating systems.

In the post-breakup world, the applications business would have every incentive to port its database to Solaris, Linux and even S/390. This move could vastly improve the performance and scalability of the database and give Oracle a serious cross-platform competitor while putting a downward pressure on prices.

That's about the only good news I can draw from this attempt at justice. But overall, it seems about as lightweight as any judgment you can get on daytime television.



RICK SAIA

E-government has potential to deliver on Web promises

A STAY-AT-HOME mother of three, after surfing the Web in her spare time to compare the positions of two candidates running for governor, casts her vote by clicking her mouse, then goes back to tend to the kids.

Three hours later, with her oldest two off to school and the baby taking a nap, mom's back at the computer. She pays her water bill, authorizing her town's revenue collectors to deduct the funds from her bank account.

Then she clicks into a chat room sponsored by the local school board, which is seeking opinions on a proposed school redistricting plan that it will vote on days later.

RICK SAIA is *Computerworld*'s columns editor. Contact him at rick_saia@computerworld.com.

Welcome to the world of e-government. From Capitol Hill to town hall, government is discovering that the Internet as an effective way of conducting public business.

It's happening, despite the fact that governments may not necessarily be drawing the best and brightest IT minds to build a virtual town hall or virtual state agency. According to *Computerworld*'s 13th Annual Salary Survey last year [Business, Sept. 6], pay for government IT jobs ranks below that of many other industries.

But town officials in Blacksburg, Va., didn't worry about that. The town is about to launch a new Web site in which individual departments will control their content (coordinated through the town's public information office), says Marc Verneil, assistant town manager. An outside firm was hired to design the site, and the town's three-person IT staff can focus on other priorities, Verneil notes.

Blacksburg has big plans for its site. According to Verneil, Blacksburg wants to tie the site into the town's financial system to enable online payment for municipal services, allowing citizens to "pretty much take care of the business that they would take care of at the counter." And in the future, Verneil says, he envisions a chat room where citizens can register their views on issues. To be fair, Verneil notes, the town, home to a large university — Virginia Tech — is helped by the fact that 85% of the population is connected to the Internet, including every Virginia Tech student.

Verneil says he believes the town's Web site has helped give residents a better understanding of town issues. He cites the recent online publication of a comprehensive plan for the town's future.

There are other signs of success as well. The IRS, for instance, said the number of computerized income-tax filings not prepared by tax professionals more than doubled over last year, from 2.4 million to 4.9 million. And state governments are putting their services online for taxpayers and businesses [News, May 22]. New Jersey, for example, recently developed a system that lets businesses apply and pay for permits needed for activities involving emissions.

Government at your fingertips could mean victory for all. Who wouldn't side with increased interest in a municipality's major issues and decreased costs? ◗

ALLAN E. ALTER

Forget trends; is it the right tool for the task?

THIS ONE IS FOR the management fashion victims — and for those who don't want to be counted among them.

Two weeks ago, I wrote that re-engineering and total quality management (TQM) could prove more useful than ever now that companies have had years of experience working with them. Rather than being regarded as dying trends, they should be thought of as just two more tools in the manager's workbench.

The important question isn't whether a trend is dead or alive, but whether it's the right tool for the job. For IT leaders, there are additional questions: Which tools should they be sure to support? Which tools are line managers using, and what are their attitudes toward management tools?

ALLAN E. ALTER, a former *Computerworld* editor, is the editor in chief of MIT's *Sloan Management Review*. Contact him at allan@mit.edu.

The latest edition of a survey by Bain & Co. provides important answers. Once per year, this Boston management-consulting firm surveys executives around the world — 214 in North America in the study just released — on which management tools they use and which ones they find most effective.

Companies in North America are using fewer management tools: 11.3 on average last year, compared with 13.6 in 1998. And when they undergo a major business initiative, they rely on still fewer to carry it out — just 4.8 tools.

Managers are sticking with familiar tools, rather than trying new ones, says Darrell Rigby, the Bain director responsible for the survey.

Comprehensive strategic-planning processes, mission and vision statements, benchmarking and customer-satisfaction measurements are the only ones used by more than two-thirds of managers — and they have the lowest abandonment rates.

The tools that managers most commonly use tend to be those they find most effective. But there are several notable exceptions, such as one-to-one marketing (marketing that focuses on individual customers) and cycle-time reduction (reducing the time required to perform business processes). Both earned the highest satisfaction results of any tool for helping to improve financial results — the most important performance measure for executives.

Managers don't put too much trust in tools: More than 80% say that most tools promise more than they deliver. The one they trust least? Knowledge management, which once again had the lowest scores for effectiveness of the 25 tools in the survey. TQM and re-engineering were in the middle of the pack for usage and satisfaction, although TQM fared better for satisfaction.

Why the decrease in tools? It's the speed of the new economy and the strength of the overall economy. Managers, Bain's researchers found, feel understaffed and short of time, so they'd rather stick with a few well-understood techniques than play with new ones. I suspect the Internet also explains why one-to-one marketing and cycle-time reduction did so well. Both are greatly enabled by Internet technologies, giving e-commerce the leg up over traditional ways of conducting business.

The bottom line for U.S. IT leaders is this: Executives aren't much in the mood for trying out new nostrums. Those that seem to be getting management's attention — and making the biggest difference — focus on strategy, speed and growth.

So don't ask if a trend is hot or not. Ask instead:

- Are you chasing fads, or are you supporting or ignoring the tools executives use and trust most?
- Can you justify time spent on tools that have little support, such as knowledge management?
- Are you putting as much emphasis on growth and strategy creation as other executives? More important, do other executives feel you are? ◗

READERS' LETTERS

Diversity is desirable

YOUR MAY 8 ISSUE featuring 100 IT leaders considered to be among the best in the industry [The *Computerworld* Premier 100 IT Leaders] was well-written and informative, but I was dismayed when I didn't see any pictures or profiles of African-Americans.

I enjoy your publication, and I am not accusing anyone of racism. However, *Computerworld* provides an influential weekly view into our industry. If there were African-Americans included in your list (and I think I have identified at least one), it would have been beneficial to everyone to see some pictures and profiles of them. African-American youth and IT professionals just starting out benefit greatly from seeing role models and potential mentors profiled in articles such as this. Seeing the examples of others that have come before you and succeeded makes it easier to strive for your goals. Experienced IT professionals and hiring managers might give the next African-American applicant or novice an equal chance to succeed based upon evidence that there are others out their doing well. People outside our industry benefit as well, seeing evidence that the IT industry is as diverse as our beloved country is.

I hope that this letter doesn't cause any angry outbursts from people believing that IT is a meritocracy. I believe that these awards should be based on merit as well. This is not a call for some sort of affirmative action, but for recognition that our industry has many diverse, accomplished role models for everyone. We all should make an effort to publicize that diversity whenever possible.

Eric L. Smith
Annandale, Va.

Why employee loyalty really went away

IT SEEMS TO ME that job loyalty went out the window a few years ago ["End of Job Loyalty?" Business, May 15], when companies started laying off employees who had worked for them for many years. It was a matter of economics for the company then, as it is a matter of economics for employees now. Many of us were laid off to see our old positions renamed and refilled with new people at a lower salary. Where was the employer's loyalty then?

It's a bit of a stretch to expect loyalty from employees at this time.

Dave Ross
Vice president
Banc of America RV Finance
Orange, Calif.

Who's a hacker?

ACCORDING TO *The Cathedral and the Bazaar*, by Eric S. Raymond, the term *hacker* was coined and adopted by those who love to write code, debug and perfect software in the open-source movement. It's unfortunate that the media have misappropriated the term to label the vandals of cyberspace. Hacking and hackers made the Internet a reality and continue to perfect software available at the cost of distribution.

Though the conventional news media might be forgiven for poor research and ignorance, *Computerworld* should show some depth in high-tech history.

Gregory Kelley
Sterling, Va.
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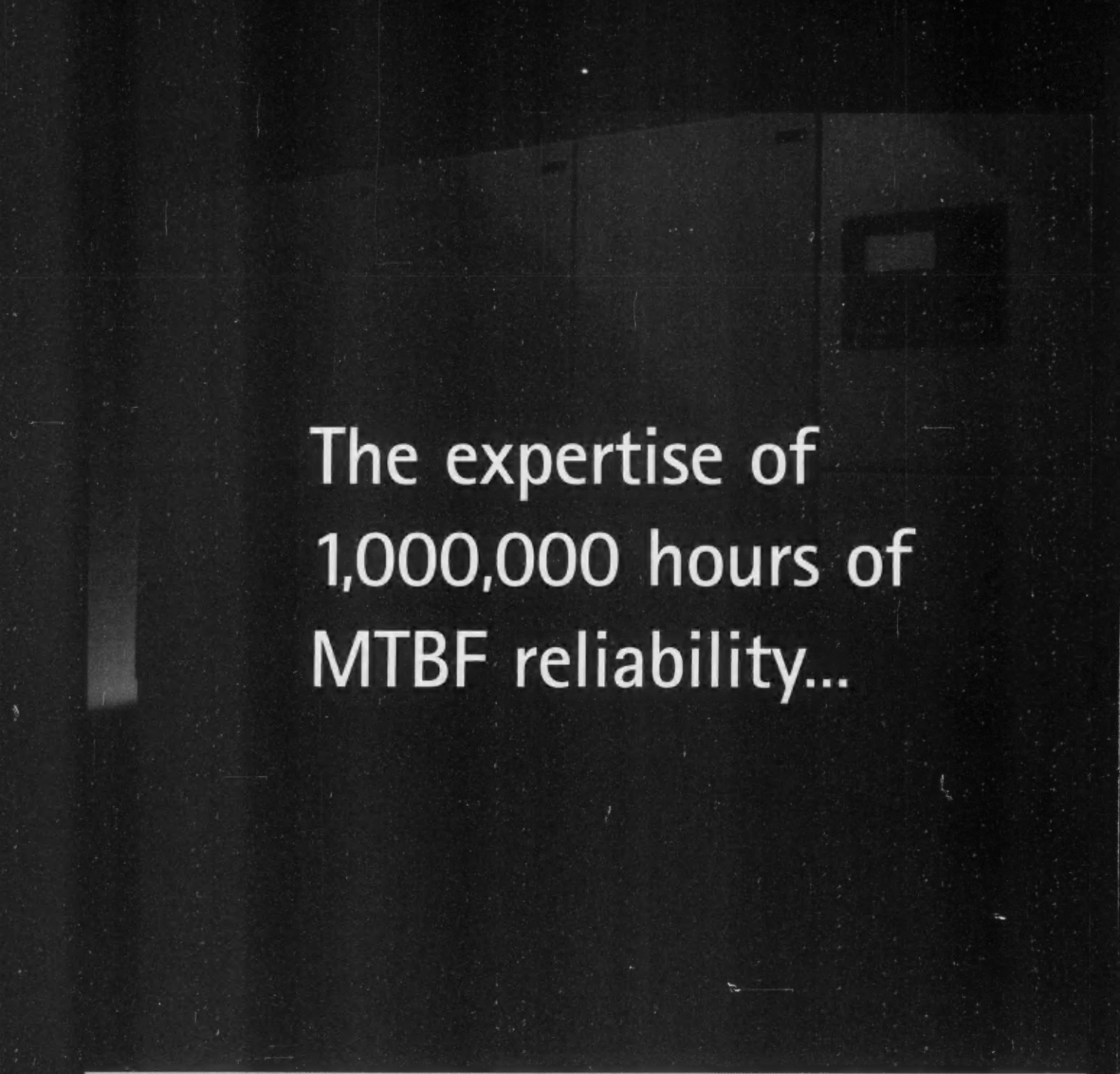
Privacy is a right, not an online commodity

IN "PRIVACY Concerns Rankle Industry" [Page One, May 29] Jill Lesser, a vice president at America Online, is quoted as saying at a U.S. Senate Commerce Committee hearing recently that "it is clear that companies are responding to the increasing marketplace demand for online privacy."

Online privacy isn't a commodity to be used by marketers. It is a fundamental right, and any attempt to treat it otherwise is doomed to failure.

Patrick P. Murphy
Charlottesville, Va.

COMPUTERWORLD welcomes comments from its readers. Letters shouldn't exceed 200 words and should be addressed to Jamie Eckle, letters editor, Computerworld, PO Box 9171, 500 Old Connecticut Path, Framingham, Mass. 01701. Fax: (508) 879-4843. Internet: letters@computerworld.com. Include an address and phone number for immediate verification.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DAVID FOOTE

Managing IT workers takes a balancing act

I THOUGHT I'D BE TAKING the ultimate "gut course" when I signed up for something called "Ecology" in high school. A little light reading and a field trip every third class to an outdoor location for a pleasant stroll to observe nature's miracles up close — I figured I'd forget most of it quickly and end up with a great tan.

But it turned out that this class brimmed with relevance and wisdom about everyday things. We observed and learned about delicately balanced systems holding the plant and animal worlds together: highly interdependent "ecosystems," where nothing happens in isolation but rather as a result of something else, and things fit together quite nicely when everything's going well.

DAVID FOOTE is managing partner and research director at Foote Partners LLC in New Canaan, Conn., an IT workforce research and advisory firm. Contact him at dfoote@footepartners.com.

The ecosystem principle is the perfect metaphor for what is essential to successfully managing IT workers in today's brutal labor market. I call it the "human infrastructure ecosystem," and understanding how it works is what separates great employers who build on their successes from those whose people-management practices are dangerously hit-or-miss.

Take employee retention. Of the 700 employers whose management practices my company tracks annually, most are experimenting in a disjointed fashion with numerous tactics to hang onto their people. Few have what could be called comprehensive or highly coordinated retention plans, and as a result they're often unable to sustain any hard-fought gains. They're just trying to keep up. What they're missing is the bigger ecosystem picture of critical interrelationships and interdependencies among the various components of a well-oiled human infrastructure.

To start, employers need to think more carefully about the interplay of their salary, incentive-and-reward and performance management practices — and about the messages these practices send to employees about how to get ahead in the company. Next, they must continually connect their workers' activities to overall career aspirations, craft individual development plans and provide coaching and training to help employees reach their potential. Carefully woven into this should be comprehensive integrated recruiting and selection strategies and programs built on top of nonintrusive assessments of skills that are on hand, those that are needed now and those that will be needed in the future. Employers must ask themselves, "Which skills and competencies should be purchased on the open market, and which can be developed internally or rented via contractors and consultants, and how can we build consistency and flexibility into the process?" And if they expect to continue to lose people, what are the backup plans for maintaining equilibrium on teams and critical projects and in departments and divisions?

And this is just a small piece of the whole picture of the human infrastructure ecosystem. Tying it all together are core competencies in enterprise (vs. traditional) project management; open communication among management and workers; a work environment and culture that make workers feel safe, desired and respected; and continuous leadership and management development programs. Finally, and perhaps the hardest thing to achieve: The ecosystem and its many elements must connect to corporate goals and objectives.

Anything else and you're doomed to fail, no matter how well you might be doing in the short run. If you focus on balance and managing the interrelationships, you'll get better, longer-lasting results. Maybe you'll even have time to get out for a stroll in the park.

THORNTON MAY

CIOs can be business masters of tomorrow

ONE OF THE MORE provocative points I make in classes I teach at UCLA and UC Berkeley is that the CEOs of the future will probably be drawn from executives now working in corporate IT. I say this with total confidence because the environment in which IT executives find themselves today is the perfect training ground for the executive wealth creators of the future.

THORNTON MAY is vice president of research and education and the corporate futurist at Cambridge Technology Partners Inc. in Cambridge, Mass. Contact him at tmay@ctp.com.

Unfortunately, many organizations will arrive at the conclusion that corporate IT execs make great CEOs only after learning painful lessons from unproductive managerial dalliances with vendor execs. It's important to differentiate vendor executives (who create and sell technology) from IT executives (who create value by using technology). These are two totally different sets of skills.

As a doctoral candidate in Japanese studies in the late 1970s and early '80s, I observed that the Japanese had a distinct managerial advantage during that time. Why? Because the world they grew up in — resource-constrained, with a small domestic market and a constitutionally mandated postwar orientation toward peaceful commerce — was the perfect training ground for the then-emerging global competitive environment. The Japanese were very good at building small, fuel-sensitive cars because they had to be. Their economic environment demanded it.

The current business environment demands that IT executives be future-focused, able to initiate charismatic change programs and courageous enough to pull the plug on initiatives gone bad. The people best trained for the future will rule it, and they will be IT execs.

Successful IT execs are driven by a sense of the future. In some cases, this orientation imparts a deepened sense of purpose, leading several top CIOs to comment that they want to be remembered not for the work they've done, but rather for the work they have yet to do.

CEOs have learned that one of their most important roles is managing investors' perceptions. One way to manage such perceptions is to position a company to be labeled as a top candidate for leading the way to the future. The slightest whiff of economic nostalgia will significantly reduce a company's price-to-earnings ratio. The popular literature reflects this future obsession, showing that it's no longer enough to be good at the "new" thing. One must be the creator of the "new, new" thing.

IT executives will play two key roles in the future:

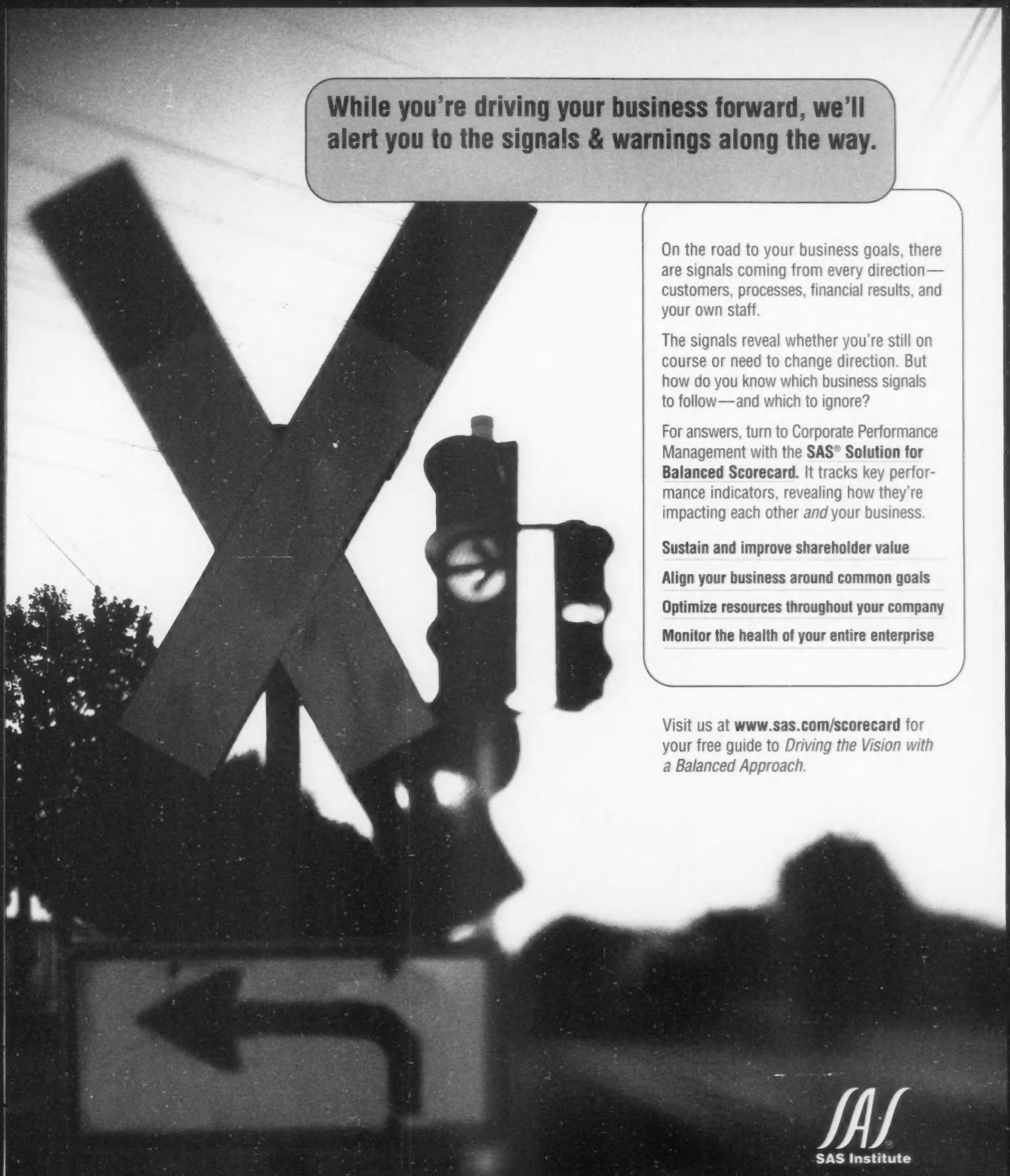
Starter: With the exception of the equator and the prime meridian, everything begins somewhere. All Old Economy players toiling in the kitchen of the New Economy are starting with more or less the same ingredients, but not everyone will end up producing palatable economic entrées.

The CIO is emerging as the CEO's preferred choice to play the role of chef — the starter/change agent for Old Economy organizations striving to discover technology-enabled ways to combine old ingredients into delightfully tasty, high-growth, attractive-margin recipes.

Stopper: IT executives are realizing that every high-value project begins in chaos and ends in something approximating order. The situation at the beginning of major change initiatives may be fuzzy and ill-defined — that's natural. But don't stifle chaos — embrace it. In this early, ill-defined state, we will lack a lot of details. Tolerance for ambiguity is one of the key skills of the future.

In certain cases, executives will learn that they're following the wrong path. The great executives of the future will be world-class at ejecting bad ideas and terminating bad projects.

All organizations are either fleeing from a troubled past or moving toward a vision-rich future. CEOs must be able to paint a compelling picture of an exciting future, be able to start programs that move the organization toward that future and be strong enough to dump projects that prove — after a short while — to be inconsistent with it. It's what all good senior IT execs do right now.



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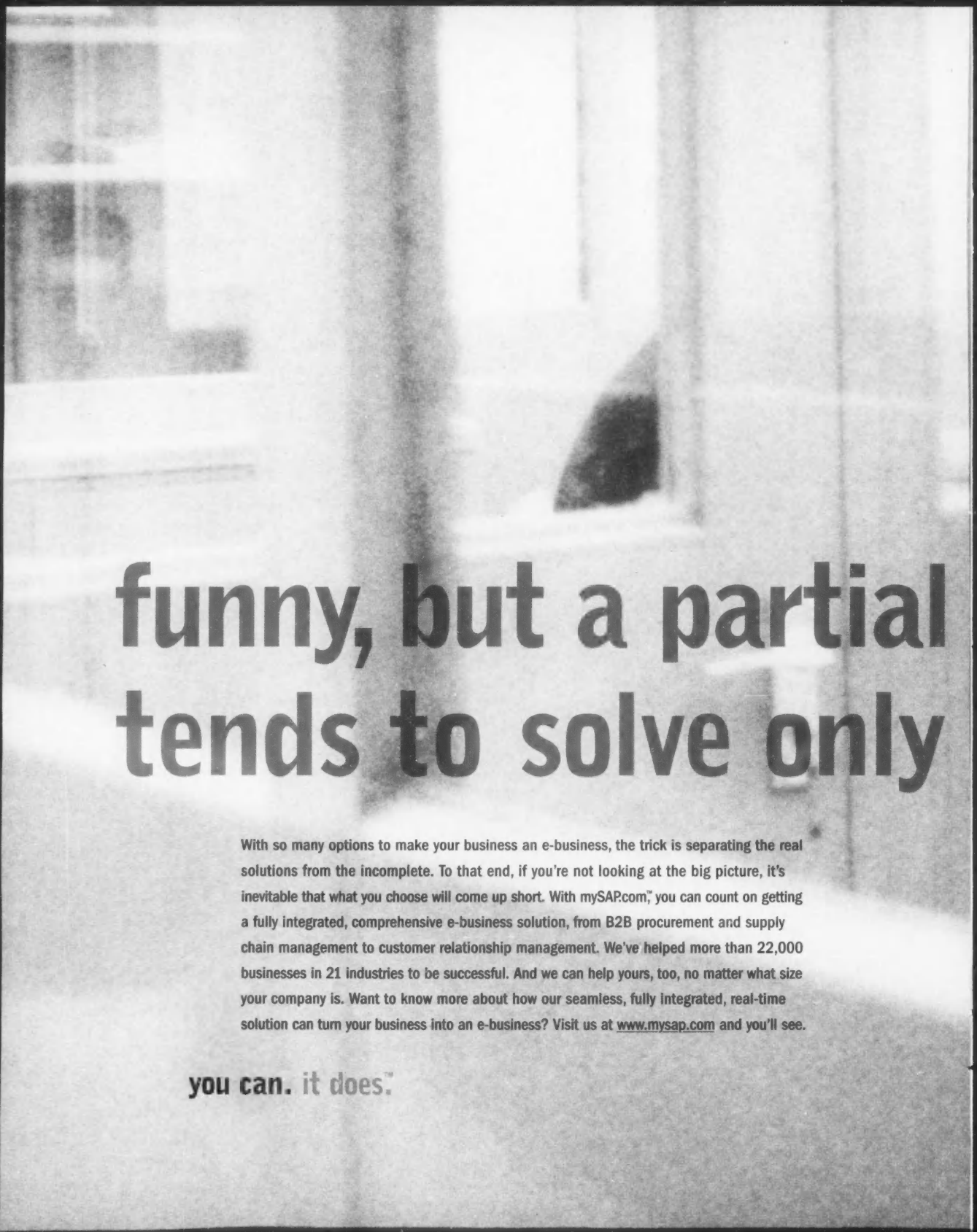
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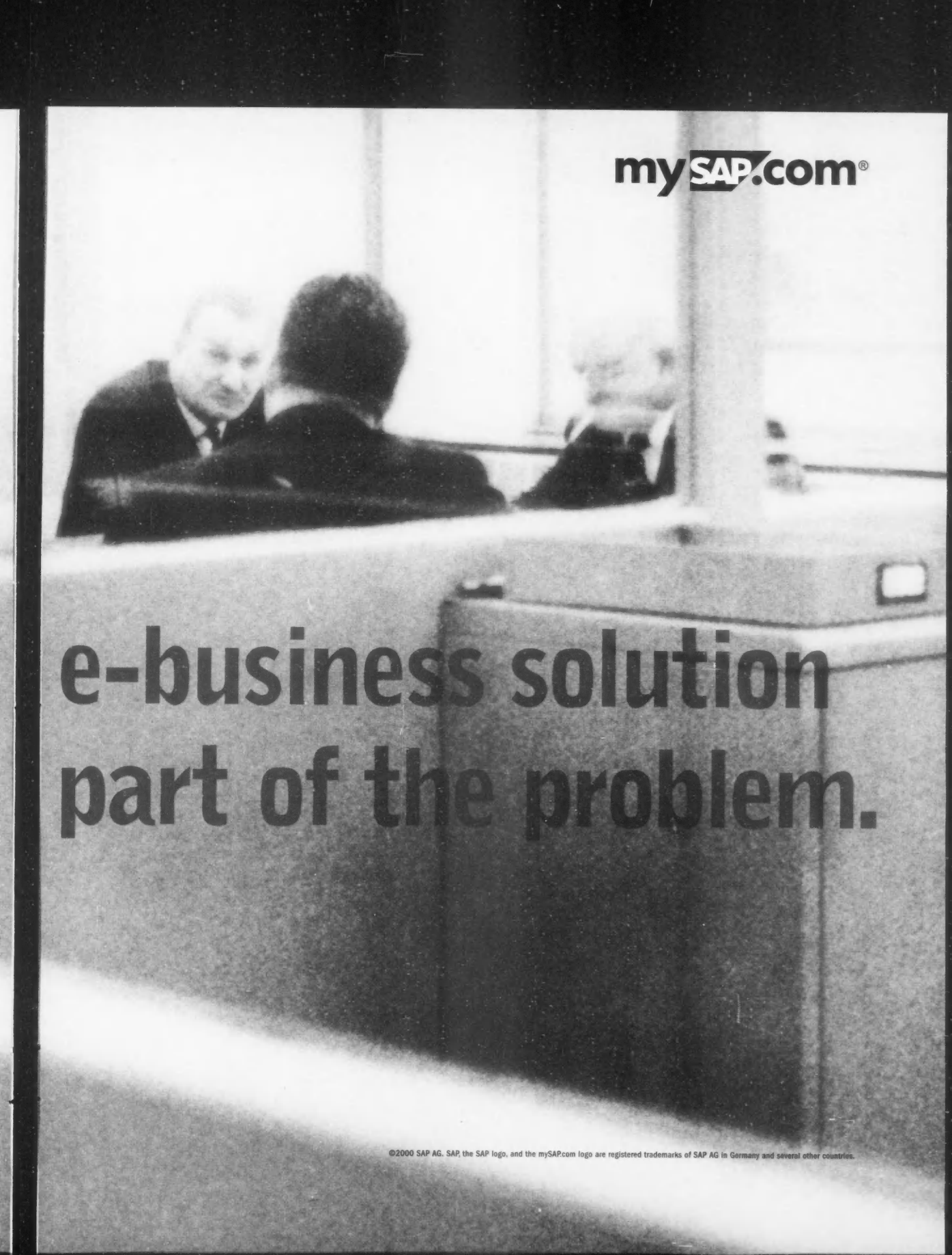

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SPECIAL REPORT

Hits & Misses

Seven months after *Computerworld* named its Top 100 Emerging Companies of 2000, most are doing pretty well, despite the souring market for start-ups. The next big wave of winners in today's Web economy will be those that help companies reach beyond their corporate borders to their customers. Here's a look at how some of the Top 100 Emerging Companies have fared.

INSIDE

Emerging to Applause A look at why three companies have succeeded.

Down to the Nitty-Gritty E-commerce, customer care and supply-chain management success stories. 40

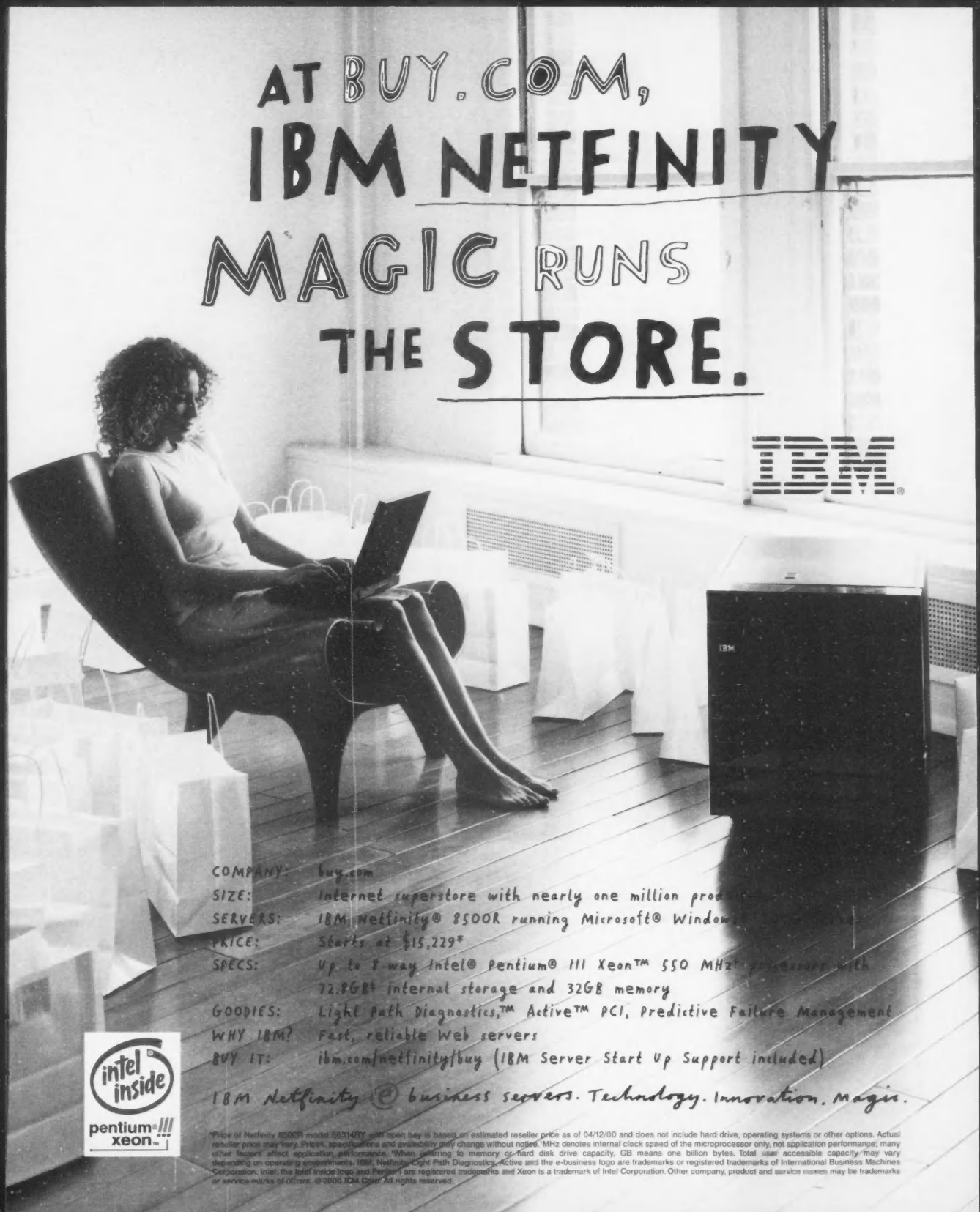
Want the Money? Show Me the Plan! The current financing landscape for start-up companies.

What's Next? Reaching Out to Customers Think wireless, B-to-C, self-healing systems and more. 42

Hits & Misses A quick look at one successful emerging company and one that struggled, along with customer comments. 43

Workstyles We talk with three IT professionals to get a glimpse of what life is like inside three of the Top 100 Emerging Companies. 44

ILLUSTRATIONS BY DAVID DOLLIN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SERVERS: IBM Netfinity® 8500R running Microsoft® Windo
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LOOKING BACK

Emerging to Applause

BY MARK HALL

Many of the companies named to *Computerworld*'s Top 100 Emerging Companies list have racked up one big win after another in the seven months since the list was published in November. Like other hot companies, the three profiled here can boast growing sales, successful initial public offerings (IPO), new product releases and other milestones.

BUSINESS

These companies also exemplify character traits the best firms must have to continue to prosper — creative problem solving, employee-centric management and the desire to win.

TWEAKING TECHNOLOGY

Jane Kirkland worried a lot about the shaky Internet infrastructure in Asia last March. But instead of merely fretting about it, she worked overtime tweaking what she could to ensure that the largest reverse auction involving Asian suppliers to date would go off without a hitch.

What troubled FreeMarkets Inc.'s CIO most was Carrier Corp. The subsidiary of United Technologies Corp. needed to buy more than $200 million worth of AC/DC motors for its HVAC systems over a period of three years.

Carrier wanted to use FreeMarkets' online marketplace to solicit bids from 50 companies in seven countries throughout Asia and the Pacific Rim. Problem was, not all of the suppliers had the same level of Internet access or technical capabilities.

That disparity posed a substantial technical challenge for the two-day bidding war, which was to be completely restricted to cyberspace.

To make certain that every supplier was on equal footing and that Carrier got the best deal on parts, Kirkland jetted to Singapore, Hong Kong and New Delhi and contacted each of the suppliers, going over their technical operations with a fine-tooth comb. She oversaw numerous mock bidding events to ensure that none of the suppliers would be left behind.

The auction was simulcast live on FreeMarkets' Web site to 16 Carrier locations, where buyers reviewed the bids from the various suppliers. According to Geraud Darnis, president of Carrier's Asia-Pacific operations, the event "reinvented the way business is done in Asia."

Kirkland says the Carrier deal underscored the value her company's Web business offers to mainstream manufacturing companies — companies that have already transacted $5.4

Down to the Nitty-Gritty

BY DAVID ESSEX

As dot-com start-ups and Old Economy companies exploit the Web as a new channel for doing business, they're challenged to maintain their relationships with customers and suppliers. The fastest-growing emerging companies are providing some answers.

TECHNOLOGY

Computerworld identified the most successful of the Emerging 100 by looking for revenue growth, new products, acquisitions and initial public offerings (IPO), among other indicators. We found many in the customer care, supply-chain management, e-commerce and network markets.

Companies such as Agile Software Corp., Broadvision Inc., CommerceWare Inc., Extricity Software Inc. and Kana Communications Inc. are helping customers build and solidify relationships with customers and suppliers over the Web.

Dell Computer Corp. began using Agile's Agile Anywhere suite of Web-based collaboration software in March to maintain a "private supplier exchange" with makers of components. Dell will use the exchange to quickly and privately notify suppliers of changes in product configurations and component needs. The Dell deal came near the end of a fiscal year in which Agile saw its revenue nearly double to $32 million, initiated a 2-for-1 stock split and saw 50% growth in its customer base. But, still in its initial growth stage, Agile lost $35 million for the year.

Broadvision's One-to-One Financial software, a soup-to-nuts online financial application with built-in customer care and marketing tools, is helping Jeremy Jaffe personalize Web connections with brokers and consumers doing business with Boston-based Liberty Financial Cos., where Jaffe is vice president and head of e-commerce. "I call it just-in-time communication," Jaffe says. "It allows you to provide the right information to the right people at the right time."

Jaffe says building an e-commerce presence has been difficult and expensive, and he says he wishes for more shrink-wrapped software. He says Liberty's e-commerce efforts will include a mix of off-line and online channels, with wireless services for customers just on the horizon.

According to Barry Ariko, the new president and CEO of Extricity, business-to-business e-commerce is already in its second generation: It's become B-to-B relationship management. Extricity, which sells application-server software that allows business partners to communicate securely over the Web, has been on a roll of late. In Feb-

43%

of the 28 emerging companies that had gone public as of August 1999 said they were profitable in 1998

Top 100 Emerging Companies Acquired Since August 1999

EMERGING COMPANY ACQUIRED	MARKET SEGMENT	ACQUIRED BY
ChiliSoft Inc.	Application development	Cobalt Networks Inc.
Riverbed Technologies	Application development	Aether Systems Inc.
RightPoint Corp.	Customer care	E.piphany Inc.
Andromedia Inc.	E-commerce	Macromedia Inc.
Webline Communications Corp.	E-commerce	Cisco Systems Inc.
The DocSpace Co.	Information & knowledge mgmt.	Critical Path Inc.

billion of business in Pittsburgh-based FreeMarkets' online marketplace.

ACQUIRING SUCCESS

A strategy of gobbling up new customers quickly has been one of the underpinnings of Kana Communications Inc.'s growth strategy during the past six months. One of the fastest ways to do that is through acquisitions, but that can often be disruptive and cause more problems than it solves.

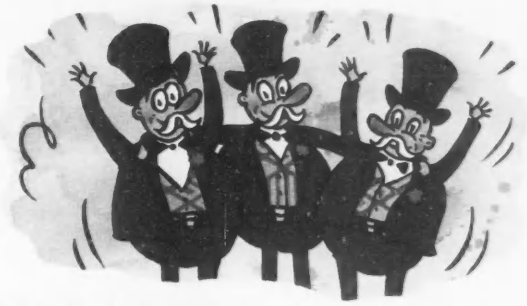
Kana strives to integrate new companies quickly and smoothly. And it doesn't just pay lip service to the concept. In April, after Kana completed its $4.2 billion purchase of Silknet Software Inc., it flew all 300 of its newly acquired employees from Manchester, N.H., to a company get-together at a Marriott hotel in Santa Clara, Calif.

In the throes of growing pains that ballooned the company's payroll from fewer than 70 people last June to more than 800 as of March, Kana executives recognized that knitting together different companies would require exquisite skill and care. So the Redwood City, Calif.-based developer of online customer communications software shut down its operations for three days to woo new staff members from Silknet and last year's acquisitions, including Connectify Inc. and NetDialog Inc.

To help break the ice among so many strangers at the meeting, Kana CEO Michael McCloskey asked the attendees to look under their seats, where each person found an envelope containing a certificate for 100 shares of stock in the new public company.

Bringing the right mix of people together has been key to Kana's success, according to Bala Srinivasa, an analyst at Pacific Growth Equities Inc. in San Francisco.

Srinivasa likens Kana's industry to the customer relationship management market during its period of consolidation a few years ago. "If you agree that it's consolidating, Kana looks like it's assembling the best pieces of technology and new customers," Srinivasa says.



FINALLY, IT'S ABOUT SELLING

Upon his arrival as CEO of CommercialWare Inc. in January, Amesh Mehta immediately bet his salespeople at the Natick, Mass.-based retail e-commerce software maker that he could outsell all of them and still do his job. At stake: a cool $2,000 to the one who nailed the first prospect.

"I challenged the sales force to call prospects," he says. "And I beat them," he adds, recalling how he brought in Casual Corner Group Inc. in Enfield, Conn. as the first new customer.

Analysts who know Mehta, such as Janet Suleski at AMR Research Inc. in Boston, say he's an "exceptional" leader. Suleski praises Mehta for sharp recruiting, fixing the company's marketing message and cutting key deals with IBM and San Mateo, Calif.-based Blue Martini Inc. She says she believes CommercialWare should continue to thrive in the retail application software market, which she expects to grow 36% this year. ◗

ruary it released a new software platform for creating Web-based trading markets. In May, it secured a $50 million round of mezzanine financing and filed for an IPO.

"Real value happens in the management of relationships between companies," Ariko says. So the market's focus is shifting away from what Extricity co-founder Greg Olsen calls the "B-to-B pipes"— enterprise application integration tools and messaging middleware that he says are becoming commodities — toward value-added services such as industry-specific templates and programming tools that allow business partners to quickly set up B-to-B links.

Listen to e-commerce enablers and the analysts who track them, and a broader theme emerges: integration. Many of the challenges aren't new, such as fitting legacy applications to new ones, melding the business processes of companies or linking consumers to customer service centers. But integration is a multicompany — and often worldwide — job involving virtual private networks, extranets and other secure Web connections.

Deciding who has what rights to participate in what ways in this tangle of public and private networks is a major challenge, one that companies such as Extricity are paid to help figure out and automate. Extricity Alliance Manager 4.0, for example, allows business partners to specify which processes must be performed jointly and which can be changed without consulting the other company.

While popular security schemes such as Secure Sockets Layer encryption and digital certificates are part of the answer, there's no one-size-fits-all standard, according to vendors and analysts. Companies tend to buy a single vendor's B-to-B platform and then get business partners to adopt it.

The emergence of XML as the glue for Web-based collaboration is enabling many B-to-B applications. It plays a key role in software from Agile, Extricity, Vignette Corp. and other break-out Emerging 100 companies. But, like SQL, XML is customizable, so one vendor's version doesn't always work with another's. Yet promising standardization efforts are under way. One example: the Product Definition Exchange, a standard similar to Portable Document Format for exchanging documents among members of a supply chain.

Underpinning the burgeoning commerce communities are networks that are faster, often cheaper and loaded with value-added services such as IP telephony and videoconferencing. Increasingly, parts of an enterprise's network, such as fault tolerance and security, or server farms for hosting Web sites, are outsourced. Often, entire wide-area networks are being managed by third parties. ◗

Essex is a freelance writer in Antrim, N.H.

EMERGING COMPANY ACQUIRED	MARKET SEGMENT	ACQUIRED BY
Altiga Networks	Network and comm. mgmt.	Cisco Systems Inc.
Cerent Corp.	Network and comm. mgmt.	Cisco Systems Inc.
Xiotech Corp.	Systems management and security	Seagate Technology Inc.
IPivot Inc.	Web infrastructure	Intel Corp.
Sandpiper Networks Inc.	Web infrastructure	Digital Island Inc.
CloudScape Inc.	Web infrastructure	Informix Corp.
Solutions by Design Inc.	Web applications	IT Factory
2Order.com	Web applications	Primus Knowledge Solutions Inc.
iClick Inc.	Business process automation	Consumer Financial Network

21%

of the 28 emerging companies that had gone public as of August 1999 said they were profitable in 1999

Want the Money? Show Me the Plan!

BY MARIA TROMBLY

The Nasdaq Stock Market Inc.'s recent volatility may be worrisome for high-tech start-ups, but information technology managers aren't losing much sleep about not having enough new technology to choose from.

BUSINESS

Business-to-business e-commerce companies are still going strong, while plenty of new technology — maybe even too much, say some observers — is in the pipeline from both established and emerging companies.

"The technology companies were going too fast," says Vladimir Mindin, director of information systems at Manhasset, N.Y.-based Administrators for the Professions Inc., a medical malpractice insurance company that's a subsidiary of Jacksonville, Fla.-based FPIC Insurance Group Inc.

Mindin says it can be hard for a midsize company to evaluate and implement new products, given the rate at which they're being developed.

"The market isn't capable of absorbing all the new technology," he says, likening software and hardware developers to a rapidly advancing army that gets too far ahead of its supply train and starts to fall apart. "They've become victims of their own success."

And while emerging companies are moving quickly to bring new products to market, even established software firms can get ahead of their customers.

For example, Mindin says his company was preparing to install Microsoft Corp.'s SQL Server 7 when he heard reports that the more advanced SQL Server 2000 was about to be released. "That means that the product we're making plans to use is already obsolete," he says.

Other IT professionals say they're relieved to see the shakeout they predict is about to occur among high-tech start-ups.

Mark Rivette, director of administrative systems and IT services at the Calgary Regional Health Authority in Calgary, Alberta, says he takes the long-term view. "We're watching for success or lack of success," he says. "We're watching the direction that Internet procurement will take."

Once the winners emerge, Rivette says he'll know what direction to take at the public health organization.

What's Next? Reaching Out to Customers

BY FRANK HAYES

What's next? What emerging companies and technologies will be hot for the next six months? Think wireless, B-to-B, B-to-C, managed services and self-healing systems.

TECHNOLOGY

There's an easy rule of thumb for the short term: "What's hot today will be hot in six months," says Ray Paquet, a vice president at Gartner Group Inc. in Stamford, Conn.

"There's no radical event in the next six months that will force change, like Y2k," Paquet explains.

And according to *Computerworld*'s Emerging Companies 2000 update survey, that means vendors whose technologies help organizations reach out to their business partners — in areas such as e-commerce and supply chain management — will continue to do well.

On the other hand, emerging companies that are focused on information technology-shop functions and internal business processes — areas such as security, knowledge management and business process automation — won't be growing nearly so fast.

It's not just because *e-anything* is hot. Those outward-looking capabilities are aimed at bringing in new business and more revenue. On the other hand, tools and technologies designed to improve businesses from the inside are mostly for making an organization more efficient — and for cutting costs.

And right now, generating business beats cutting costs hands down.

So what technologies will drive the success of emerging vendors for the rest of this year?

Wireless applications and tools for building them. The tidal wave of handheld devices that connect to the Internet won't slow down anytime soon. Conventional application development tools are designed for users with a big screen in front of them. Any tools that make it easier to give users information on their tiny cell phone or palm-

50%

of the 28 emerging companies that had gone public as of August 1999 said they weren't profitable in 1998

Top 100 Emerging Companies That Have Launched IPOs Since August 1999

COMPANY NAME	MARKET SEGMENT
Embarcadero Technologies Inc.	Application development
WebMethods Inc.	Business process automation
Kana Communications Inc.	Customer care and supply-chain management
Cobalt Networks Inc.	Network and communications management
F5 Networks Inc.	Network and communications management

"Blips in the market don't affect us that much," he says. "In fact, they put us in a good position in that we can ensure longer-term success and more appropriate use of taxpayer dollars."

Despite the screaming headlines, the business-to-business e-commerce sector isn't really suffering, says Larry Penley, dean of the business college at Arizona State University in Phoenix.

"It is under restructuring at this point," he says. "But there is still lots of money floating around."

According to Penley, who works closely with venture capitalists in Arizona, investors plan to maintain their current levels of funding in dot-coms but with a more jaded outlook.

"They're just going to scrutinize the plans much more closely, apply a different set of decision rules," he says. "Companies have to have a valuable service or product that someone is going to want to purchase."

According to Penley, business-to-business e-commerce companies have the greatest potential for creating sophisticated services that were impossible before the dawn of large integrated data systems and high-speed communication networks.

But consumer-oriented start-ups are competing in a relatively mature Internet space full of established players. "They have market share and awareness," says Dick Green, president of Briefing.com Inc., a Burlingame, Calif.-based firm that provides market analysis to online brokerages. "To come in and compete will be difficult."

But even business-to-consumer companies can still get funding, he says, provided they have a well-crafted business plan, a solid niche and a good shot at making a profit.

There are plenty of people in Silicon Valley who have made a lot of money taking companies public and are willing to put up cash to fund people with good ideas, Green says. As a result, he adds, there won't be a shortage of technological innovation anytime soon.

For example, the rate of initial public offerings (IPO) for dot-coms, which suffered a dramatic decline in the past couple of months, is still relatively strong — particularly in comparison with previous years. Twenty companies filed IPOs last month — compared with only four in May 1999 and 17 in May 1998, according to New York-based research company IPO.com Inc.

Still, companies' stock prices have plummeted following their IPOs, as have share prices for technology companies across the board.

That means less money from the stock market will be available to new companies to use to grow or invest in new technology.

In addition, many companies have delayed their plans for IPOs. Last month, 23 Internet-related companies withdrew planned IPOs, compared with 32 from January through April, according to IPO.com.

"Before, people felt if they had a superior technology or could get market share through advertising, that was sufficient to get a company to go" public, Green says. "And it was. But there were so many initial public offerings that went out with a lot of hype and advertising, and the stock did poorly. Now, they have to show a solid, profitable business plan."

top screens will find a warm welcome.

Business-to-business applications, especially for managing customers and supply chains. Sure, B-to-B exchanges and portals will get lots of fanfare, and they'll be backed by corporate giants. But emerging vendors will provide products that help those organizations jump-start their use of XML or smooth out the wrinkles of customer care.

Business-to-consumer tools. E-commerce was supposed to be so simple — an online store, a little personalization software and every bricks-and-mortar retailer was going to rule the Web. Nothing's turned out to be that easy. Emerging companies whose technologies can bring retailers up to speed will be hot, especially those with track records — and some of the best will be selling technology that has already been proven by e-commerce leaders.

Service monitoring and managed services. The dark, dirty underside of the Internet is still its lack of reliability. Maybe customers and suppliers can connect to do business with you; maybe they can't. Services that can quickly spot Net bottlenecks on the way to your Web site — or even guarantee that business partners can punch through to make their B-to-B connections — will continue to do well until big Internet backbone providers improve the Net's performance.

Self-healing systems. Once business partners or consumers are connected, they want response times measured in microseconds. Tools that keep e-commerce and supply-chain systems working on a 24-by-7-by-*right now* basis — especially if they clear problems without requiring a human to respond — will drive business for the emerging companies that offer them.

But young companies may not be the only players in the emerging-technology game. "Old, established data-center companies are remaking themselves for e-commerce," says Patrick Dryden, an analyst at Giga Information Group Inc. in Dallas.

While large vendors may not be as nimble as start-up companies, they have stability that appeals to corporate IT shops — and resources to buy out start-ups. In fact, 15% of *Computerworld*'s 1999 Top 100 Emerging Companies were acquired — most of them by established vendors.

Acquisition is no guarantee that a young company's products or technology will thrive, or even survive. But it may compensate for fears that a small supplier may be a flash in the pan — or not steady enough for the long haul.

"IT operations people are more comfortable with people in white shirts from the established companies," says Dryden, "not people from start-ups in black T-shirts, sandals, tattoos and piercings."

COMPANY NAME	MARKET SEGMENT
GRIC Communications Inc.	Network and communications management
Agile Software Corp.	Web applications
Centra Software Inc.	Web applications
Eloquent Inc.	Web applications
Net.Genesis Corp.	Web applications
Resonate Inc. (filed for IPO)	Web infrastructure
Eprise Corp.	Web infrastructure

COMPANY NAME	MARKET SEGMENT
Versata (formerly Vision Software)	Web infrastructure
Accrue Software Inc.	E-commerce
ClearCommerce Corp.	E-commerce
FreeMarkets Inc.	E-commerce
Netcentives Inc.	E-commerce
OnDisplay Inc.	E-commerce
Rowecom Inc.	E-commerce

79%

of the 28 emerging companies that had gone public as of August 1999 said they weren't profitable in 1999

HITS & MISSES

Companies and Customers

Company
FreeMarkets Inc.

PRODUCT/SERVICE: BidWare auction-hosting software and an auction-hosting service.

REASON FOR SUCCESS: Not only provides auction software but also helps to ensure that the right bidders participate in the auctions. A market operations team works with customers to ensure that the proper bidders are invited to auctions and that they are connected and in attendance when the auction begins.

RECENT MILESTONE: Officials said FreeMarkets moved $2.7 billion worth of goods through its service last year. The start-up also reported revenue of $21 million, a 167% increase from the previous year.

Customer
Owens Corning

PRODUCT/SERVICE USED: Used FreeMarkets Inc. products and services to buy and sell materials and services such as motor freight contracts and plastic packaging.

BENEFIT GAINED: The glass fiber and composite materials maker says it has surpassed savings goals of 5% by using the auctions but wouldn't disclose exact amounts.

WHY CUSTOMER CHOSE FREEMARKETS: Owens officials say they like the services FreeMarkets offers such as making sure the proper buyers and sellers are online.

QUOTE: "[Online auctions and procurement have] taken procurements from being perceived as just playing golf and sitting around eating doughnuts to being a strategic part of the business." — John Gellatly, procurement leader at Owens Corning.

> [Online auctions have] taken procurements . . . to being a strategic part of the business.
>
> JOHN GELLATLY, PROCUREMENT LEADER, OWENS CORNING

Company
EdgeNet Inc.

PRODUCT/SERVICE: Founded in 1993 as an Internet service provider (ISP), EdgeNet sold the ISP portion of its business in April 1999 to focus on selling a Web development language and software to handle online sales of configurable products.

REASON FOR DOWNTURN: Since selling its ISP operation, EdgeNet has cut its staff from 42 to 20 people and has seen its revenue shrink from more than $4 million to less than $2 million.

RECENT MILESTONE: Released last September, Bondware is touted by EdgeNet as an inexpensive application for creating community-oriented Web sites.

Customer
Passport Health Communications Inc.

PRODUCT/SERVICE USED: EdgeNet Inc.'s Bondware tool, which was billed as a tool for developing community portals.

RESULT: Passport said Bondware was too difficult and expensive to customize. The company is now building a new community site with ColdFusion from Allaire Corp.

QUOTE: "From a small community perspective, in theory, Bondware is a good idea. But as far as being a distinctive site development tool, its just not there." — Greg George, Web administrator at Passport Health.

> In theory, Bondware is a good idea. But . . . it's just not there.
>
> GREG GEORGE, WEB ADMINISTRATOR, PASSPORT HEALTH

143%

was the average opening-day increase in the stock prices of the emerging companies that had gone public as of August 1999

Emerging Company Market Segments

SUCCESSFUL SEGMENTS	"STILL-EMERGING" SEGMENTS
Customer care and supply-chain management	Business process automation
E-commerce	Information and knowledge management
Network and communications management	System management and security
Web applications	Consulting and services

What It's Like to Work at . . .

Artesia Technologies Inc.

INTERVIEWEE: Mike Scott, co-founder and director of engineering operations, technical operations group (TOG)
MAIN PRODUCT: The TEAMS software suite, which enables companies to build repositories of media-rich content for use on the Internet and on intranet and extranet sites to drive corporate branding, e-commerce and new media initiatives.
LOCATION: Rockville, Md.
AVERAGE AGE OF EMPLOYEES: Late 20s to early 30s
DRESS CODE: Casual for the whole company. "Jeans and T-shirts are acceptable in TOG, but it's more business casual in other parts of the company."
WORKDAY: "Pretty flexible. Our one charter is to maintain support on-site from 8:30 a.m. to 6 p.m. With such a small group, that gets difficult sometimes, but we manage. Our systems are set up so that if there are problems, we're automatically paged, and we all carry beepers."
8:30 TO 6? AT A START-UP? "People have the attitude here that they want to get the job done, so if it's not super busy, that's a typical day. But you also see people stay late and arrive early for systems maintenance. So we have a real flexible schedule so that if you come in on the weekend, you can take Tuesday off — if the schedule will allow it."
ON-SITE AMENITIES: "A new lunchroom that's much larger than we had before and has Foosball tables. People around here love to play Foosball. . . . We have a minibar area where people can gather to discuss ideas, and next to that is a teaming area with floor-to-ceiling whiteboards. . . . And we have a family wall that's full of photo collages of people's families and pets."

EC Cubed Inc.

INTERVIEWEE: Toby Booth, information technology director (also responsible for facilities management)
MAIN PRODUCT: ecWorks, a Java-based, customizable business-to-business e-commerce platform, and accompanying outsourced e-commerce hosting and management services
LOCATION: Westboro, Mass.
DRESS CODE: Casual — jeans and a collared shirt.
WORKDAY: Anywhere between 7:30 a.m. and 5:30 p.m.
REALLY? AT A START-UP? "We don't have any night owls at this time — we don't have 24/7 service yet, and it's not planned at this time. An average day is eight to 10 hours."
BEST PERKS: "We have bagels every Monday morning, and on Friday afternoons we have a social hour to wind down and connect with others. We just kicked off an employee-referral program called Hire Power, where the grand prize is a one-year lease on a new BMW. We don't have a formal IT recognition program, but when I see people working crazy hours, I may give them a gift certificate for dinner for two or send them home early on a Friday."
QUOTE: "This is more fun than anyplace I've worked in my career. There's the excitement of being in a growing company. The culture is relaxed, but people work incredibly hard, and since we all have stock options, we work with a different purpose."

ChiliSoft Inc.

INTERVIEWEE: Chris Walker, online marketing manager, or Web czar: "That was my official title for a while, but my new one is more title-y."
MAIN PRODUCT: ChiliSoft ASP, a software development tool that enables Web developers to build platform-independent Active Server Pages applications
LOCATION: Bellevue, Wash., which is "just a couple of miles down the road from Microsoft."
DRESS CODE: Casual — jeans, shorts, T-shirts and sneakers.
WORKDAY: "I don't know if it's intentional, but they have staggered hours. They get in between 7 a.m. and 11 a.m., and at least one of them is usually here when I leave at 6 or 7 p.m. The IT manager has a cell phone and is on call 24 hours. The other two guys are pretty much off the hook."
WHAT KIND OF UNIQUE CAREER PATHS ARE THERE FOR IT FOLKS? "Since we're small, we can change direction very quickly, and each time there's a change, opportunities come up to move into new positions. Plus, we're always expanding the operating systems that we support, so IT is constantly learning new things."
BEST PERKS: "The daily hackey sack hour at 3 p.m., a lot of Mexican fiestas, free ice cream at lunch every few weeks and very cheap Mountain Dew and Cokes (25 cents). And off and on over the past year we've had Friday afternoon 'beerstorms' — a combination of beers and brainstorming. We get a good cross-section of people and talk about issues that came up during the week and unwind. It's a good way for people . . . to get to know each other."

— Leslie Goff

"We have a minibar area where people can gather to discuss ideas, and next to that is a teaming area with floor-to-ceiling whiteboards."

MIKE SCOTT, ARTESIA TECHNOLOGIES

"We have bagels every Monday morning, and on Friday afternoons we have a social hour to wind down and connect with others."

TOBY BOOTH, EC CUBED INC.

"Off and on over the past year we've had Friday afternoon 'beerstorms' — a combination of beers and brainstorming."

CHRIS WALKER, CHILISOFT INC.

$48.6M

was the average annual revenue of the 28 emerging companies that had gone public as of August 1999

Methodology

The *Computerworld* editorial research team conducted follow-up research to November's Emerging Companies 2000 list of 100 companies to watch to determine which of the 10 market segments and which companies were successful and which were not so successful. Our research focused on publicly available company and industry news, press releases and financial reports from August 1999 to May 2000.

We measured the success of the individual companies by the following criteria:

Growth - number of new clients or large clients, revenue, head count
Financial performance - revenues, profitability, IPO, stock price performance, venture financing
Product news - new product releases, updates or new versions of existing products
Partnerships - alliances with other IT suppliers
Expansion - expanded operations
Acquisitions - acquisitions of other companies

Market segments deemed successful were those that had the most momentum and positive activity in terms of growth, financial performance, new product, partnerships or new customers.

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BUSINESS

E-LIQUIDATION

When European online fashion retailer Boo.com folded last month, its liquidators found themselves in uncharted territory. How do you sell off a company with few, if any, tangible assets? The e-commerce failure also raises questions about the viability of online niche boutiques and their ability to compete with clicks-and-bricks brand names. ▸ 48

WASTEFUL LAYOFFS

The recent IT layoffs by IBM, Hewlett-Packard and others are shortsighted and wasteful, writes Kevin Fogarty. With unemployment at a record low, it won't be long before those companies are scrambling to find new workers. And they'll find themselves shelling out hefty headhunter and sign-on fees to do so, he argues. ▸ 48

A LEANER UTILITY

Two years ago, Cincinnati-based gas and power utility Cinergy Corp. was operating on 43 disjointed systems. The company has cut that figure to five, spruced up its e-commerce offerings and added digital tracking capabilities. The result: cost savings and an edge over new competition, just in time for deregulation. ▸ 52

SHOPPING ON THE RUN

Citigroup has begun testing a new project using mobile telephones for e-commerce. The project, under way in Japan, lets shoppers make purchases with Diners Club cards using their cellular phones. If all goes well with the test, scheduled to run through the end of the year, Citicorp plans to roll out the service globally. ▸ 54

LEAVING STARBUCKS

Why would the CIO of a major corporation jump ship to work at an obscure Internet start-up? Deborah Gillotti, former CIO at Starbucks, says the time was right to bring her experience to a company poised for growth. In an interview with *Computerworld*'s Julekha Dash, Gillotti talks about her move and her plans. ▸ 56

THE 100 BEST PLACES TO WORK

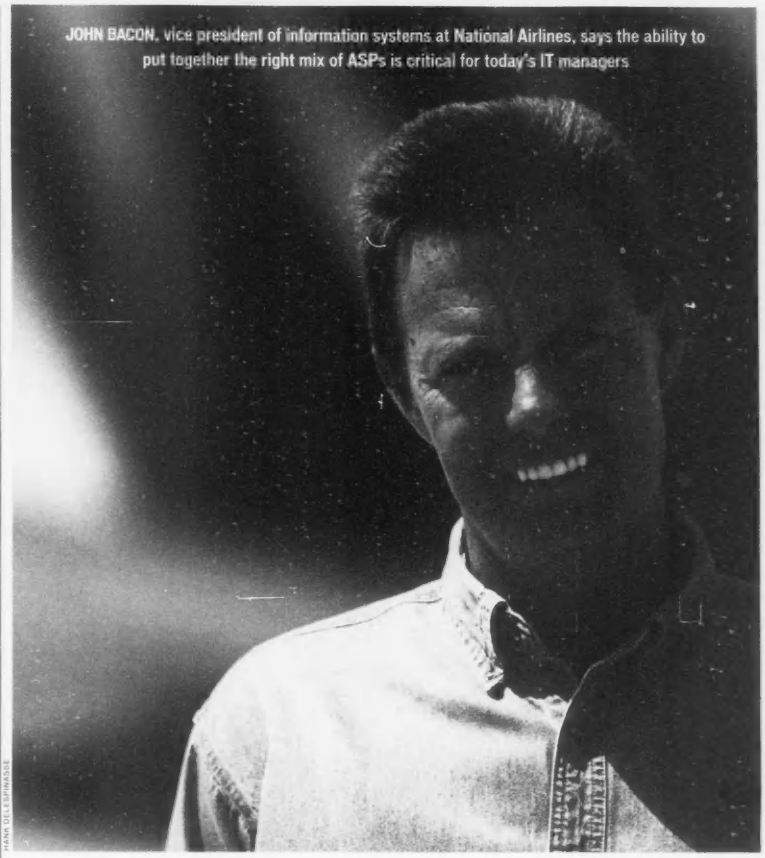
Some companies are just too good to leave. You've heard about them — places where workers are not only satisfied, but also committed to their employers. What does it take to earn such loyalty? *Computerworld* continues its monthlong look at The 100 Best Places to Work in IT, examining just how they hang on to staff. ▸ 60

QUICKSTUDY

Companies no longer rely solely on the bottom line to measure success. These days, they're using an array of business metrics to gauge their worth. ▸ 64

MORE

Advice 65
Opinion: Peter G. W. Keen . 56



HANK DILLESPINASSE

JOHN BACON, vice president of information systems at National Airlines, says the ability to put together the right mix of ASPs is critical for today's IT managers

THE REWARDS AND RISKS OF ASPs

YOU CAN SAVE TIME AND MONEY by turning to application service providers (ASP), but along with such benefits come risks. Issues that need to be considered when turning to an ASP include integrating the provider's applications with your legacy systems, working with vendors that may not be around for long and losing control of your IT infrastructure.

58

Boo.com Failure Raises Questions About Online Boutiques

Dismantling an Internet company proves to be a challenge, say execs and analysts

BY JENNIFER DiSABATINO

Starting an e-business can be easy. Taking it apart is painful.

Take the high-profile fashion Web site Boo.com, which folded last month. It was one of the biggest e-commerce failures to date in Europe and came at the same time other online retailers, including Toysmart.com and Brandwise.com LLC, were calling it quits.

Boo.com's software and intellectual property were bought by Bright Station PLC, a British information technology firm. The company's domain and brand names went to New York-based portal Fashionmall.com Inc.

But according to liquidators at KPMG International, the British accounting and consulting firm that handled Boo.com's liquidation, the process of dismantling the company was definitely a challenge.

KPMG had to sell off a company with little, if any, tangible assets, said KPMG liquidator Jim Tucker. Boo.com's computers were leased, and its software, though cutting-edge, was partly licensed.

What Boo.com did own was the information inside the heads of its developers. But those developers weren't inclined to stay at a bankrupt Internet company for very long, said Tucker.

"Companies such as this are highly dependent on a small number of key IT people with whom the vast amount of the knowledge resides," Tucker said. "That's why we had limited time to sell Boo.com."

Andy Dancer, chief technology officer for e-commerce at Bright Station, said Boo.com's software, which Bright Station bought for $374,900, is quite advanced. He said he was tickled to get the software at a price that was about 0.6% of the cost of developing it.

He said Bright Station plans to use the Boo.com software — which was used to take orders in several languages — to market to other online businesses that want to localize their products for consumers in other countries.

Going Mainstream

The Boo.com and Toysmart.com failures may be a sign that online boutiques geared toward niche markets aren't about to win over the customers of mainstream retailers.

"The largest [online] clothing retailer out there is J. C. Penny," said analyst Harry Wolhander at ActivMedia in Peterborough, N.H. And the key to J. C. Penny's success isn't the expensive and eye-popping graphics but the reliability and trust in a brand name, he said.

"Think L. L. Bean," Wolhander said. "You say, 'Oh my God, I can send my shoes back after 20 years and get them re-soled.' "

Alan Alper, an analyst at Gomez Advisors Inc. in Lincoln, Mass., said even clicks-and-bricks like Toysrus.com have had problems filling orders in a timely fashion. But they can rebound because their brand names will bring customers back, he said.

Going mainstream is what Boo.com will do in its next life.

Ben Narasin, CEO of Fashionmall.com, said his company isn't very identifiable outside the U.S., so he plans to combine Boo.com's European name recognition with Fashionmall.com's local success.

A smart move, said Wolhander. "Look at all that money that Boo spent to promote the brand," he said. "Fashionmall actually knows how to execute that stuff."

Narasin plans to simplify the site with a smaller bandwidth requirement to make it easier for customers to navigate. Because Fashionmall.com doesn't sell products directly, it doesn't need the attention-grabbing graphics, he said.

"It's the difference between what you see on the runway and what you see in the store," Narasin said. "We do it simpler, cleaner, faster." ◗

Ben Narasin, Fashionmall.com CEO, says the company will use the Boo.com brand name to expand globally

KEVIN FOGARTY/BRICKS AND CLICKS

Layoffs are shortsighted

IN AN EFFORT to shore up its bottom line a couple of weeks ago, IBM Global Services sold itself short.

In the hottest economy in decades, with an average U.S. unemployment rate below 4%, at a time when IT jobs at just about every company are going unfilled, IBM announced it's laying off 1,000 specialists in Y2k and other projects that are no longer active.

Hewlett-Packard also has plans to turn over 5% of its workforce (on purpose, presumably, not because of attrition, which is what's happening to every IT shop in the country right now). Ernst & Young laid off 5% of its consultants a couple of months ago, too.

The reason for the layoffs, according to analysts, is that high-end consulting companies have to stay current. That means hiring people with the right skills — not teaching old dogs new tricks.

The problem with that is it's wasteful — of talent, of experience and of money.

Layoffs always hurt morale, which drives off the employees you actually want to keep, especially in a worker's market like this one. As a result, IBM and HP could find themselves short-staffed and spending a fortune trying to replace the workers they sent packing.

The Information Technology Association of America (ITAA) claims there are 800,000 unfilled IT jobs in this country and that the number will double by year's end. Assuming the ITAA's even half right, the trend is going to make hiring even tougher than it is now.

Computerworld's own hiring research shows the average time it takes to hire a new body has gone up from two months a couple of years ago to three months. And the cost of filling a position is also on the way up.

Plus, once you talk a good prospect into considering a switch, it will cost a hefty sign-on bonus and an average 20% jump in pay to get him on board.

So even for consultancies that need the hottest skills, it makes sense to spend some time and money to retrain the people they already have rather than spend money on layoff packages, then more money on recruiters, then more money to hook new prospects who will spend six months just learning where the bathrooms are.

Human resources consultant David Foote, talking about the IBM layoffs, told *Computerworld* two weeks ago that only about 5% of IT workers can really be retrained to fill other roles.

That my be true, when companies offer employees the opportunity to take on extra training only while doing their current jobs.

But if you devote some exclusive time for training and make it clear to employees that in six months you're going to be laying off people with their skills, you'll see how motivated they are to learn the new stuff.

In *Fiddler on the Roof*, Tevye says, "When a poor man kills a chicken, one of them is sick!" With the economy and job market the way it is, the same thing is true of technical managers who lay off their technical workers.

If there's not a job-related reason to get rid of them, hang on tight, even if it requires retraining.

Don't sell yourself short by losing the people who actually understand your business while pursuing 23-year-olds whose strongest recommendation is the ability to spell XML. ◗

Kevin Fogarty is *Computerworld*'s Business editor. Contact him at kevin_fogarty@computerworld.com

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CONFERENCE AGENDA

Sunday, June 18, 2000

12:00pm - 5:00pm
Registration

7:00pm - 9:30pm
Pre-Conference Networking Reception

Monday, June 19, 2000

8:30am - 9:00am

Welcome and Opening Overview
Maryfran Johnson, Editor-in-Chief
Computerworld

9:00am - 9:45am

Opening Keynote: "IT Leadership vs. E-Leadership"
Charlie Feld, E-Leader and former CIO, Delta Airlines
CEO, The Feld Group

10:00am - 11:30am

"The Naked Truth About B2B E-Commerce"
Kevin Fogarty, Business Editor
Computerworld
Moderator

Panelists:
Robert Schwartz, VP & GM, Panasonic Corp. • Kathy Brittain-White, CIO & EVP, Cardinal Health (cardhealth.com) • Peter Burrows, CTO, Reebok International • John Keast, CIO/CTO, NetworkOil • Bruce Carver, VP of Informational Management and Technology, Reynolds & Reynolds

11:30am - 12:15pm

Insider View: "Raytheon Corp.'s Unfolding E-Business Strategy"
Eric Singleton, Director of Global E-Business
Raytheon

12:30pm - 1:45pm
Interactive Luncheon with IT Leaders

2:00pm - 3:30pm

"Enterprise Security: Will Only the Paranoid Survive?"
Priscilla Tate, President
Technology Managers Forum
Moderator

Panelists:
Greg Schaffer, Director, PricewaterhouseCoopers • Allan Paller, Columnist, Computerworld and Research Director, SANS • Tim Talbot, VP of Technology Management, PHH Vehicle Management Services • Allen Jost, VP Business Development, arrnic, Inc. • John Pickett, CIO, Toysmart.com

3:30pm - 4:15pm

Afternoon Keynote: "Innovation & Change"
Thornton May, VP of Research
Cambridge Technology Partners

4:30pm - 5:00pm
"Riding the E-Business Rollercoaster"
Dave Schrader, Ph.D., Director, E-Business Strategy, NCR Corp.

5:00pm - 5:30pm
"Mobilizing E-Business: Handhelds in the Enterprise"
Chuck Yort, VP, Marketing Business and Government, Palm, Inc.

5:30pm - 8:30pm
Expo Open and Reception/Buffet Dinner

Tuesday, June 20, 2000

8:45am - 9:00am
Remarks and Day Two Overview

9:00am - 9:45am

Keynote: "Lessons Learned on the Net Frontier"
David Lord, CEO
Toysmart.com

10:00am - 11:30am

"ASPs: The Double-Edged Sword of Outsourcing"
Mark Hall, West Coast Bureau Chief
Computerworld
Moderator

Panelists:
John Voeller, CKO, CTO & SVP, Black & Veatch • Sateesh Lele, President, Lele Consulting Group • Tsvi Gal, CIO, CTO & VP of Mergers and Acquisitions, GBS • Mark Mathias, President, Eureka Digital • James Lubinski, EVP, Galileo International

11:30am - 12:15pm

Featured Speaker: "Strategies for Success in the Internet Economy"
Peter Solvik, Senior Vice President and CIO
Cisco Systems

12:30pm - 2:00pm
Buffet Lunch and Expo Open

2:00pm - 3:30pm

"Walking the E-Customer Tightrope"
Julia King, Senior Editor
Computerworld
Moderator

Panelists:
Cathy Hotka, VP, National Retail Federation • Robert Rubin, CIO, Elf Atochem North America • Manoj Tripati, CIO and Vice President, Jamba Juice • Gary Cooper, VP Information Systems, Tyson Foods • John Plummer, IT Division Manager, Corning • Bob Williams, CIO, The Vanguard Group

3:30pm - 4:15pm

Insider View: "Taking Care of E-Customers at Autobytel"
Ann Delligatta, COO
Autobytel.com

4:30pm - 5:00pm
"Driving the E-Services Economy"
Deborah Nelson, VP, North American Marketing & Partnering Org.
Hewlett-Packard

5:00pm - 5:30pm
Sponsor Presentation: To Be Announced

5:30pm - 6:30pm
Expo Open and Reception

7:00pm - 9:00pm

Premier 100 Awards Presentation and Gala Dinner
Featured Keynote: Jim Yost, CIO
Ford Motor Company

Wednesday, June 21, 2000

8:45am - 9:00am
Remarks and Closing Day Overview

9:00am - 10:30am

"How to Win the Hiring War Between the 'Dots' and the 'Nots'"
David Weldon, Careers Editor
Computerworld
Moderator

Panelists:
Irene Dec, VP of International Investments, Prudential Insurance Co. • Margaret Schweer, HR Director, Kraft Foods • Robert Bruce, CIO, Allmerica Financial • David Foote, Managing Partner, Foote Partners LLC • Jim Prevo, CIO, Green Mountain Coffee • Fran Quittel, Columnist, Computerworld

10:30am - 11:15am

Closing Keynote: "Putting All the Pieces Together: The E-Management Difference"
Peter Keen, Author, *The eProcess Edge*, and Chairman
Keen Education

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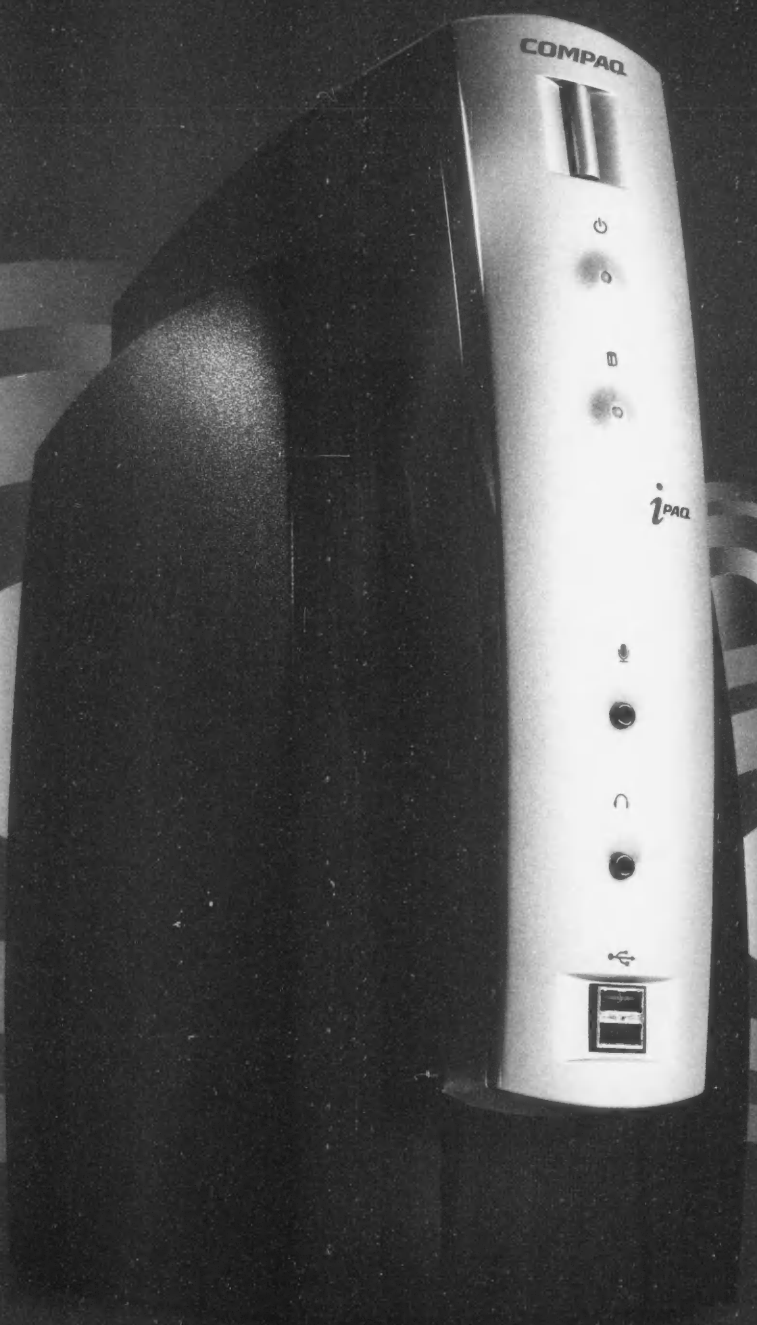

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Utility Sees Big Payoff From IT Investment

BY MATT HAMBLEN

After a 1994 merger of two Midwest utilities created Cinergy Corp. in Cincinnati, the mad pace toward gas and power deregulation in Ohio began in earnest.

Faced with so much change in the business environment, Cinergy reorganized and has spent more than $20 million since 1998 to better integrate its computer systems.

The result: Cinergy is a $6 billion utility that expects $12 million in savings by year's end because of its information technology investments, said Greg Ficke, vice president of operation services.

Now Cinergy is poised to spend millions more on further IT enhancements, including an interactive Web site, Ficke said. Cinergy has approved all its IT spending based on a return on investment in three to five years, Ficke added.

Extensive Training Required

Although the company's new automated systems have brought advantages, they have also been a big adjustment, Ficke acknowledged. Employees needed extensive training.

"I'd be lying if I said it wasn't difficult, because we were changing people's jobs, and culture change was part of it," Ficke said.

"With end users, you want to underpromise and overdeliver," he added. "And that way people feel good about what they're getting."

Cinergy serves 1.4 million electric and 480,000 gas customers in Ohio, Indiana and Kentucky. But the company faces some competitive threats when Ohio moves to electricity purchasing deregulation next January. Indiana and Kentucky are planning to move in that direction within a few years.

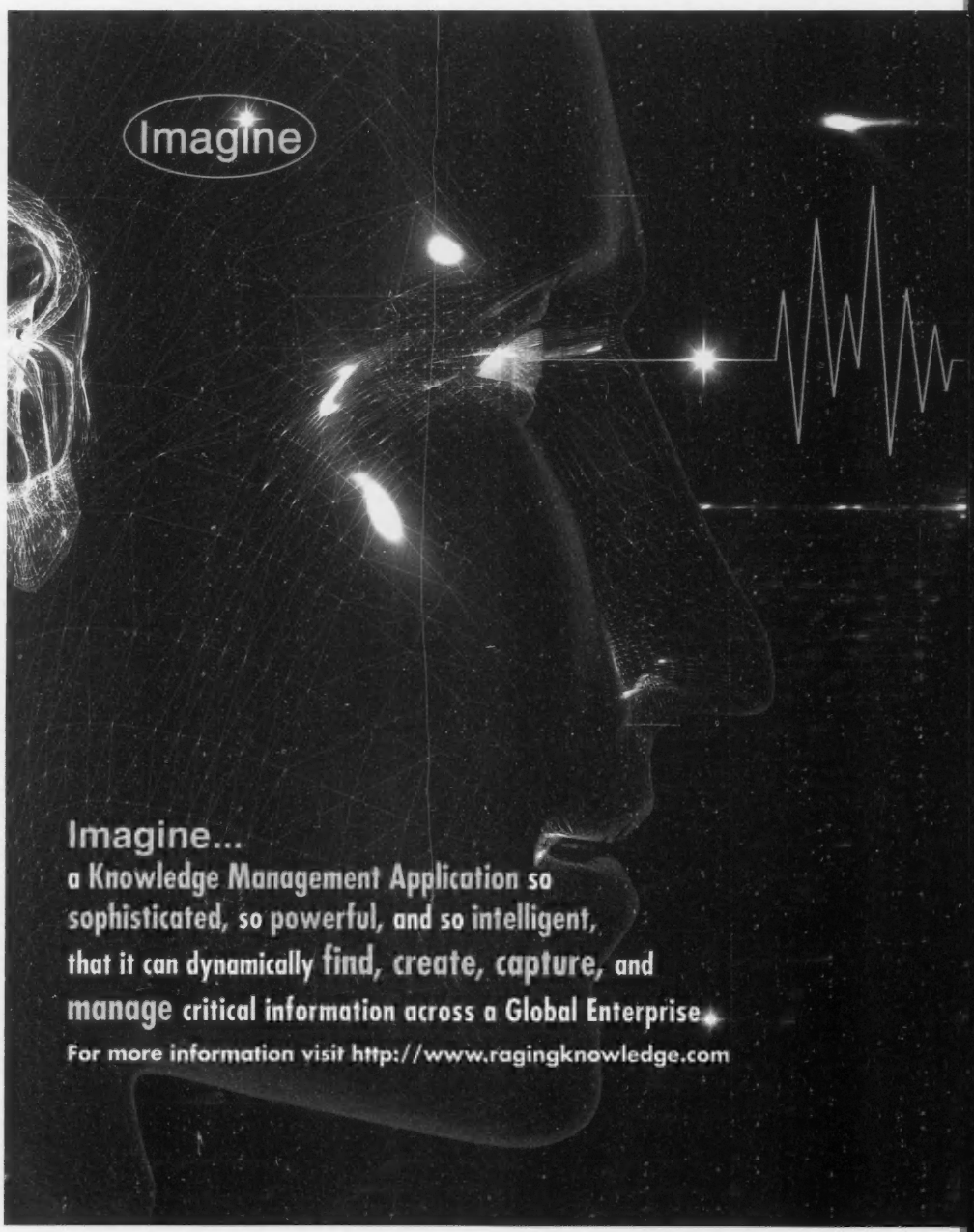
"The vision that Cinergy has shown is similar to the vision of other forward-thinking utilities facing deregulation, maybe the top 15 in the nation," said Rich Nicholson, an analyst at Meta Group Inc. in Stamford, Conn. "But a lot of the other utilities are making piecemeal IT improvements, whereas Cinergy took the holistic view."

Powering Up

Systems changes at Cinergy since 1998:

- **Online call center** that handles customers' inquiries over the Web, cutting down on phone calls
- **Geographic** information system that maps out power and gas lines digitally
- **Outage** information status tracks power outages electronically rather than relying on reports from residents
- **Customization** of all tools

SOURCE: CONVERGENT GROUP, FRAMINGHAM, MASS.



Many utilities are unveiling a variety of automation systems, including automatic dispatching of service vehicles or customer service software, analysts said. Duke Energy North America in Charlotte, N.C., for instance, built its own software to monitor power production in real time so it could submit bids in the wholesale energy market. [Business, June 5]

But, said Ethan Cohen, an analyst at Aberdeen Group Inc. in Boston, "there's definitely a case to be made" that Cinergy is better prepared than it was before to make customer service changes and be more competitive.

Leaner Systems

After the October 1994 merger between PSI Energy Inc. in Plainfield, Ind., and Cincinnati Gas and Electric Co., the combined firm, Cinergy, found it had 43 systems that didn't talk to one another, Ficke said.

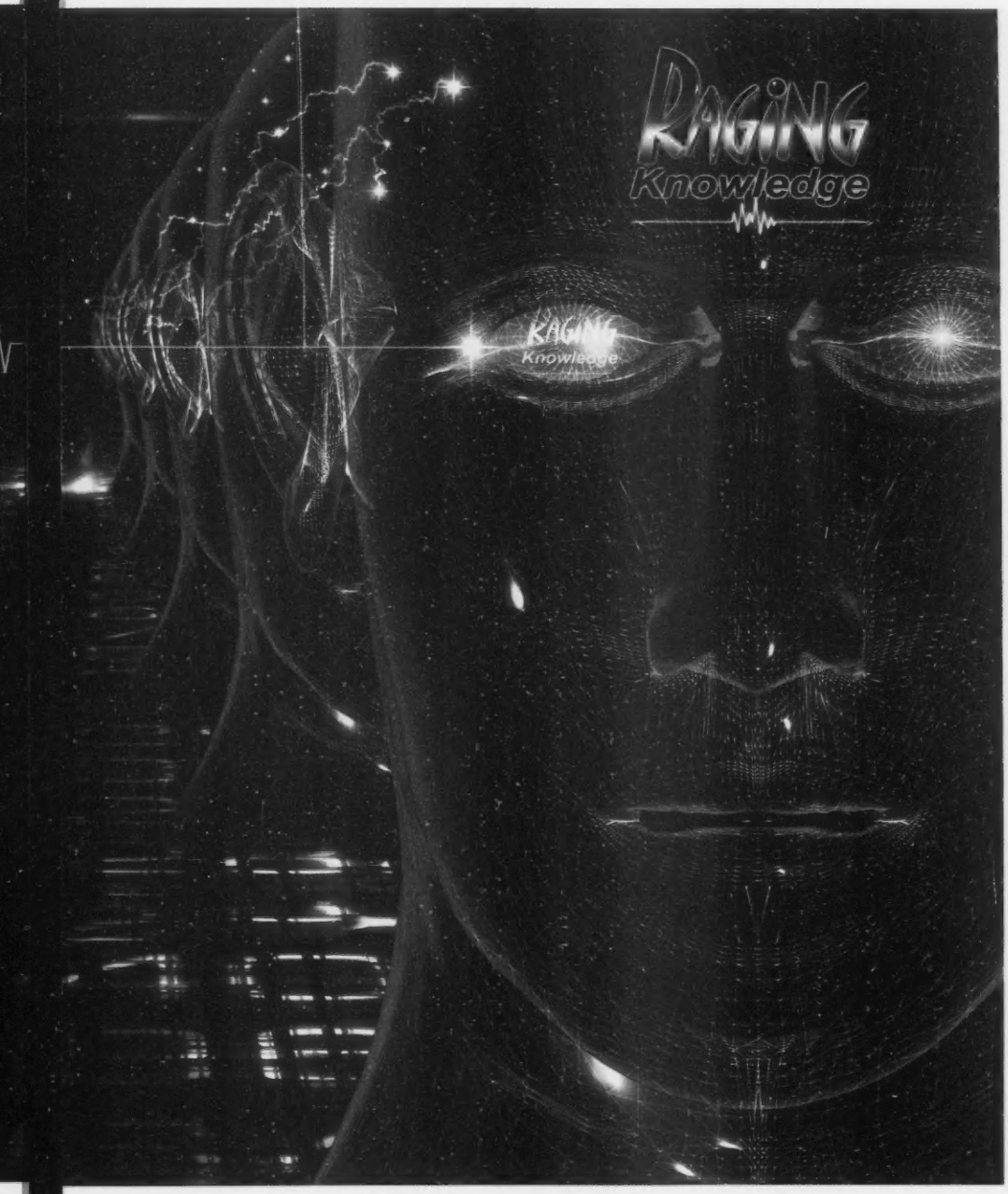
Cinergy whittled its systems down to five, which resulted in the reduction of its workforce from 9,100 employees to 9,000. Some workers were reassigned and others took early retirement packages, he said.

The systems no longer require technicians to enter data by keyboard. Instead, workers map out plans for new gas or electric lines into a computer-aided design system. When a project is designed, the Cinergy system tabulates the materials needed for construction.

By summer's end, the automatic mapping system will enable real-time readings of outages using remote sensors, Ficke said. The utility now relies on calls from customers to pinpoint outage locations.

"We'll have a much better picture of what's going on and . . . [it will] save us costs on the number of crews going out," Ficke said.

And a new Web-based system that lets customers make service orders or report trouble online should cut down on customer phone calls, Ficke said. The system is scheduled to be rolled out in three phases, with some services starting later this year.



> With end users, you want to underpromise and overdeliver. And that way people feel good about what they're getting.
>
> GREG FICKE, VP OF OPERATION SERVICES, CINERGY CORP.

Citigroup Tests Wireless Services in Japan

BY MARIA TROMBLY

New York-based Citigroup Inc. has begun a test of mobile telephones for e-commerce in Japan as a prelude to a global rollout of the technology.

The Japanese test began late last month and is scheduled to run through the end of the year.

In the pilot project, customers will use Chicago-based Diners Club International's cards to make purchases over their cellular phones. Citigroup recently bought the Japanese Diners Club card franchise.

The underlying software for the project was developed by Citigroup and expanded by online banking software developer 724 Solutions Inc. in Toronto.

Citigroup officials said they chose the Japan model because of the country's high penetration of Internet-connected digital telephones. More than 4 million of Japan's 49 million mobile phones are connected to the Internet, compared with only 500,000 of the 77 million mobile phones in the U.S., according to International Data Corp. in Framingham, Mass.

Electronics maker Fujitsu Ltd. and Japanese telecommunications companies DDI Corp. and J-Phone are partnering with Citigroup on the project, with DDI providing some of the customers.

Citigroup's wireless service will allow consumers to purchase products by typing unique product codes from advertisements into the Internet-enabled cell phones.

The consumer will have a choice of shipping and payment options, Citigroup said.

Wireless vs. Internet

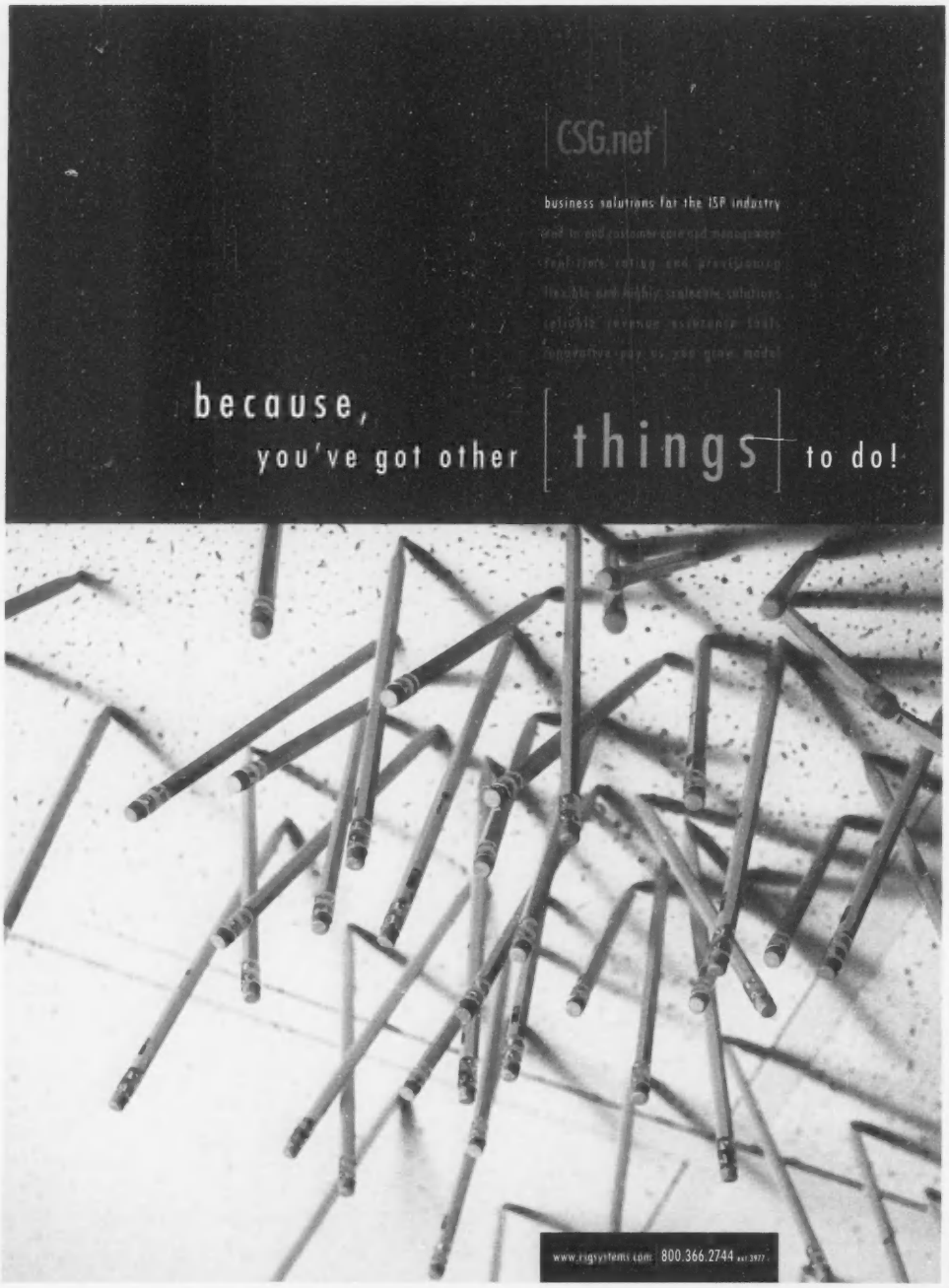
The Japanese test project will be useful to Citigroup because of what the company can learn about the technology, and it will help expand Citigroup's international presence, analysts said. But it may not be a useful model for the U.S.

"They believe the wireless channel is a way to penetrate into Japan," said George Barto, an analyst at Gartner Group Inc. in Stamford, Conn. "It's Citigroup's strategy to become a worldwide bank."

Barto said Citigroup already has an international presence with its Web site but that wireless services may be more appealing in places like Japan or Europe — where Web-enabled phones are more popular than in the U.S.

"We have a much higher Internet penetration over PCs connected to the Internet," Barto said. "So wireless services are not such a big deal and will grow slower than in other countries."

The U.S. wireless industry is also much more fragmented. "We have no unified cell phone standards and no unified cell phone Internet standards," said Richard Bell, an analyst at Needham, Mass.-based TowerGroup. "Japan is not like that; Europe is not like that. They have a more unified, more advanced environment."



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intermedia COMMUNICATIONS

WORKSTYLES

Former Starbucks Star Talks About Her Move to Start-up

Internet start-ups are filled with seasoned information technology professionals who, after leaving their mark in corporate America, want to make waves in a new venture. Deborah Gillotti, former general manager of the e-commerce division at Starbucks Corp. in Seattle, is the latest IT professional who has made such a move. Just last week, Internet database firm Viathan Corp., also in Seattle, named Gillotti as its chief operating officer.

DAVID PETERSON

Deborah Gillotti

Gillotti has a solid track record. Besides her position at Starbucks, she has held IT jobs at Duracell International and Peat Marwick International. Gillotti, one of *Computerworld*'s Premier 100 IT Leaders this year, spoke with reporter Julekha Dash about her new job.

Why did you join Viathan? "I felt that the company was at a stage early enough to make a big impact. Personally, I could bring the best of a large company experience to a company that is looking to grow."

What are your key responsibilities? "Dealing with day-to-day business management; helping to develop a business strategy; putting infrastructure and support processes in place."

How does your communication style differ at a start-up vs. a large retail operation? "[At] Starbucks, I dealt with people who were more senior. . . . In a small company like this, it's a lot less formal. I don't have to make as many adjustments in my communication styles. Everyone here knows as much or more than I do about technology. I find that interesting because I have to keep on my toes to communicate with all those people."

How do you hope to accomplish your leadership goals? "I expect to listen and learn and apply the experience that I have had to date and use the resources available to me. For instance, [Viathan's] board of directors are very accessible and I talk to them on a regular basis, and that's something new for me. At Starbucks, I'd talk maybe once or twice a year [with board members]."

What other resources have you tapped into? "Networking in Seattle with the entrepreneurial community and venture capital community. . . . I'm looking to join several organizations that focus on entrepreneurial management."

How were your networking efforts different at Starbucks? "I thought it was much harder because there are not a lot of other retailers in Seattle. A lot of networking was national. Because Seattle is so far away, it makes it hard to get to meetings on the East Coast, so you felt isolated to a certain extent. Seattle is a very large high-tech community, so [working at Viathan], there's a lot of networking to be had on a local basis."

Will you be taking any courses? "No. One of the things I've enjoyed is being a mentor for the University of Washington MBA students. I meet once a month and talk to them about issues and help them as they decide what areas to focus on in their careers. As Viathan is competing for talent in the marketplace, it's good to make those connections at universities. I'm doing something similar with the University of Pittsburgh."

What's the work environment like at Viathan? "This is the first time in my career when I'm one of the oldest people in the organization; [at] other places, I was one of the youngest."

How old are your new coworkers? "Early 30s [is] probably the median age. The [CEO] is 36, and I'm 43."

A Starbucks perk was free cappuccinos. What are some perks at Viathan? "Free soft drinks. We have a Ping-Pong table, and everyone plays. It's a perk that I enjoy although I'm a very bad Ping-Pong player."

–Julekha Dash

PETER G. W. KEEN

The 'déjà vu' effect

WE'VE SEEN the Internet before. Yes, it's new in terms of technology, but it's not in terms of business. It's the most rapid and extreme form of deregulation ever, and we know a lot about the dynamics of deregulation. The great shakeout in e-retailing is following the pattern of airline deregulation, and business-to-business e-commerce looks very much like it's doing the same.

This is central to IT's planning ahead when it can't predict. IT needs to position its technology platform and core business-support initiatives for the *next*, not the current, phase of the deregulation tidal wave. But to move ahead, IT needs to think historically. If it views some element of technology as the next Something of the Future, then it creates three planning problems for itself.

First, anyone's prediction is as valid as anyone else's, and there's no way to pick between competing prognostications. In e-commerce, look at three recent forecasts of revenues in Latin America in 2003: eMarketer, $15 billion; IDC, $8 billion; and Jupiter Communications, $3.7 billion. On which figure would you base a business proposal for e-commerce in the world's fastest-growing Internet market?

Second, the view that technology is all about the new ignores the hold history has always had on us. Internet commerce was initially lauded as "clicks" — a new channel that would displace bricks everywhere. Now, clicks and bricks are the conventional wisdom. And many companies have learned, at immense financial and competitive cost, that to exploit the new technology — the *e* — they need to respect the old rules of process and sound business — the *c*.

Third, the view of the Internet as the future actually traps companies in the "now" of innovation instead of getting them to ask: What must we do today to be positioned for tomorrow? So, for example, the race to dot-com in the B-to-B and B-to-C sectors is overfocused on grabbing market share instead of building the relationships essential to survive the inevitable shakeout, and then to prepare for the consolidation phase brought on by deregulation.

The Internet deregulates everything: industry boundaries (Autobytel.com is a car "dealer"), national trade protectionism and limits on customer choices. All this has happened in about five years.

The race to dot-com overfocuses on market share.

The full impacts of deregulation may take 10 to 20 years to show up, but the pattern is consistent. First, nothing much happens because customers aren't fully educated about their new choices — nor are they comfortable in making them. Examples are long-distance phone service, for which AT&T remained the default option for most, and e-commerce, for which consumers were first wary of using their credit cards.

Then there's a small surge of innovation that stirs everything up — Southwest Airlines, Amazon.com and Ariba (the B-to-B leader), for instance. That's followed by a massive flood of new entrants, such as the hundreds of start-up airlines, all the e-retailers and, more recently, the many B-to-B portals. Innovation grows. Then: Shakeout! The underlying dynamics of commerce take over: pricing, customer base, advantages of scale and soundness of business processes. That's e-retailing today and B-to-B within the next year. It was the airline industry of the late '80s.

Next comes consolidation. The hundreds of airlines that came out of the innovation phase in the 1970s are now reduced to a handful of megaplayers and alliances plus regional carriers. The past year in telecommunications has seen the same global consolidation, with huge mergers and acquisitions. At the end of the process, there are five to 10 major brands left, several of which didn't exist at the start of the deregulation. The middle players are squeezed and business settles down to the megacompanies plus specialized players.

If your firm's IT strategy is defined by the current phase of its industry's Internet deregulation, watch out. The real IT issue isn't today's innovation but being there at the end of the inevitable shakeout and a player in the consolidation. That won't be 20 years from now — more likely, it will be 20 months, or even 20 weeks. ◗

Keen's new book, The eProcess Edge *(written with Mark McDonald and co-published by* Computerworld*), is being launched next week at* Computerworld*'s Premier 100 IT Leaders conference.*

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The Case for ASPs

There are lots of options for using application service providers, but you need some new skills to make the right choices. By Mark Hall

HANK DELESPINASSE

THERE ARE MANY REASONS to use an application service provider (ASP). For one start-up airline, the decision to outsource critical applications to a third party helped make the difference between achieving a successful takeoff and remaining grounded.

National Airlines lifted its first Boeing 757 into the skies a little more than a year ago. Yet the airline already chalked up its first profitable month in March. Part of National's early success is linked to its information technology strategy of outsourcing critical applications to service providers.

Through the use of ASPs, the 1,300 employees at the Las Vegas-based airline get speedier access to software than they would if the company deployed licensed applications or developed systems in-house. But the ASP world requires IT executives there to look for different skill sets in their managers.

Over the years, complex applications for monitoring scheduling, pricing, routes, maintenance and other essential applications have been developed for the airline industry. Because the number of airlines is relatively small, industry-specific software is costly to license and support. According to John Bacon, National's vice president of information systems, his company never intended to buy or develop all the programs it needed to run a competitive airline. Instead, it began working with USWeb/CKS Corp. (now MarchFirst Inc., since its merger in March with Whittman-Hart Inc.) in 1998 to forge relationships with ASPs.

"Our initial IT strategy was to achieve as much outsourcing as possible," he says. Although he wouldn't put a number on it, Bacon says National has "achieved significant savings" by taking the ASP approach.

High-flying ASPirations

Executives won't argue with saving money and reaching strategic goals, but there are risks involved in going the ASP route. A survey released last month by the Information Technology Association of America in Arlington, Va., revealed that the biggest risk the IT managers surveyed perceived was integrating ASP software with legacy applications and data. The second-biggest risk, according to the survey, was working with fledgling ASP vendors that may not be around long. Last on the list was the fear of losing control of IT infrastructure.

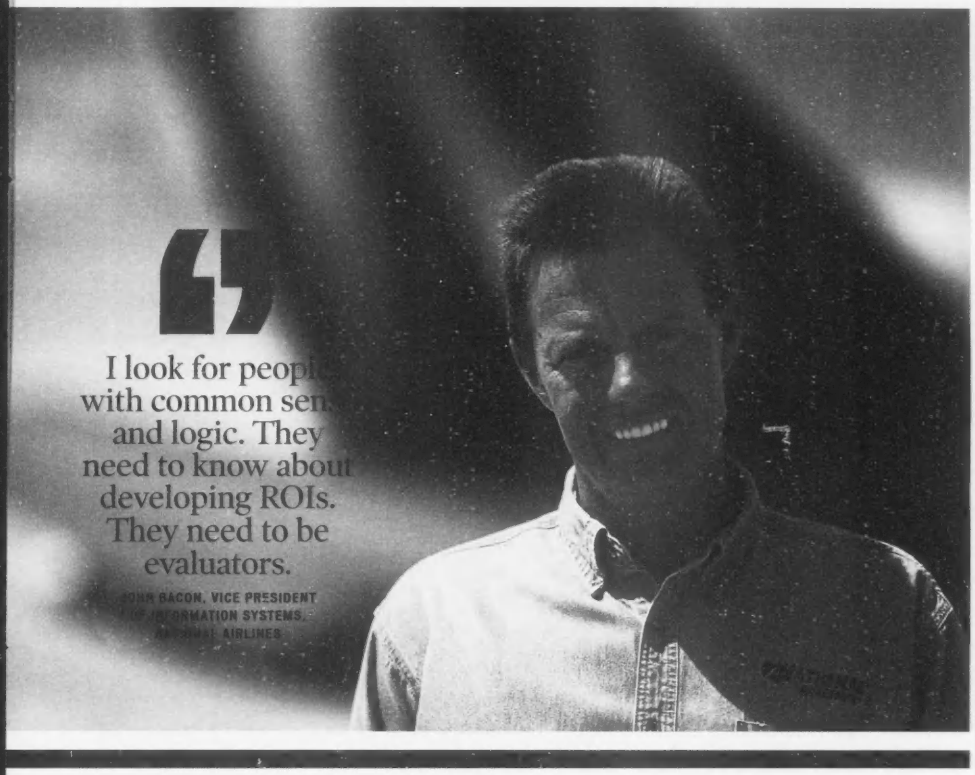
National uses ASPs for horizontal applications such as human resources, but its use of ASPs for core business software sets it apart from other ASP users. Bacon says the company's intelligent voice response system, which enables customers to "talk" to its scheduling software to get flight information, is hosted by Telera in Campbell, Calif. National also uses the same ASP-based software — from GetThere.com Inc. in Menlo Park, Calif. — as United Air Lines Inc., Trans World Airlines Inc. and others, to handle travel bookings.

In addition, the airline has hired Talus Solutions in Atlanta to run its client/server AirRMS pricing and revenue management system.

This ability to put together the right mix of ASPs is one of the latest skill sets IT managers must develop. Bacon says he expects project managers like Sally Barnes to be adept at evaluating an ASP's capabilities as a business partner and as a technology provider.

"There's a lot of subjective criteria involved," Bacon says. "I look for people with common sense and logic. They need to know about developing [returns on investments]. They need to be evaluators."

One critical trait Bacon says he seeks in people who can run his ASP-oriented shop is "being able to implement ideas from a clean sheet of paper." Plus, he says, understanding the business is more important than ever before.



As much a matchmaker as a technologist, Barnes says she spends most of her time implementing IT systems for functional groups within National, working hand-in-hand with line managers in areas such as pricing or scheduling. She determines their needs, looks for an ASP solution, develops the relationship, implements the technology, sets expectations and assurances and then moves on to the next group, handing off responsibility to the end users.

Bacon says leaving responsibility in the hands of end users is possible because ASPs manage and support the software off-site, reducing the need for intervention by his small staff.

People Who Need People

Staffing issues were uppermost in Randy Gardner's mind when he chose the ASP offering from Infinium Software Inc. in Hyannis, Mass. "Yes, we avoid the capital investment in software by following the ASP model, but equally important is my ability to keep staff busy on more strategic projects," says Gardner, vice president of information technology at Viking Freight Inc.

San Jose-based Viking, which is owned by FedEx Corp. in Memphis, had long licensed Infinium's application for human resources, payroll, accounting and other back-office functions on its aging AS/400. By switching to a monthly subscription model, Gardner says, he's now able to assign his IT workers to wireless, customer service and Web projects. Plus, he'll get a system upgrade, having haggled with Infinium to buy the latest AS/400.

Viking's analysis revealed that during the life of the contract, the company could save a "marginal" amount of money by keeping the AS/400 in-house, says Gardner. However, he says, with an in-house system, the company wouldn't be able to let its employees do more strategic work instead, among other potential payoffs.

For The Motley Fool Inc. in Alexandria, Va., choosing USinternetworking Inc. in Annapolis, Md., to host its PeopleSoft Inc. human resources application "was part of our maturing process," according to Kevin Book, The Motley Fool's director of Web development. The online financial services firm was experiencing significant growing pains, having expanded sixfold in three years, and it needed to augment its lean IT infrastructure with internal support software.

"We're beyond the point of just wanting to hire somebody so we can get some sleep," he says. "But it became a question of not wanting to lose focus." Book says The Motley Fool has numerous strategic IT projects under way that directly affect revenue, and the PeopleSoft application it chose to outsource to USinternetworking would have diverted resources from topline-oriented development, had it elected to install, manage and support the system itself.

Setting New Standards

Another reason IT managers like using ASPs is that it lets them control a particular problem. Tricon Global Restaurants Inc. in Louisville, Ky., had been trying to get a handle on a variety of nonstandard PCs used throughout its branded divisions. Tricon, which spun off from PepsiCo Inc. early last year, is the parent company of the Kentucky Fried Chicken, Pizza Hut and Taco Bell chains. Each division had its own method for procuring and managing desktop systems, which became centralized under Tricon's IT group after the spin-off.

Norm Lippay, Tricon's senior manager of technical services, says compliance with corporate standards for software licensing and procurement processes among Tricon's three business divisions was helter-skelter. To change that, he embraced Rosemont, Ill.-based Comdisco Inc.'s IT Control and Predictability program. Under the program, users and IT staff follow established guidelines for purchasing desktop and laptop machines, as well as for the type of software and version they can run.

"It gives us more control over the process flow. And it gives users access to information about their equipment," Lippay says.

Comparing the cost of using ASPs to that of using licensed models is far from an exact science, says Joe Feliu, chief technology officer at Hayward, Calif.-based AllAdvantage.com Inc., which pays people to surf the Web while it collects "clickstream" data for advertisers. He estimates that a good negotiator could save 50% over comparable license software during its first year of use.

As for Tricon, the ASP approach allowed the company to roll out its desktop standardization program quickly and helped it move its three divisions to new systems in record time — without placing a burden on Tricon's centralized IT operations.

"Saving a little money didn't hurt either," Lippay adds.

Evaluating Your ASP

If you're sizing up an ASP, here are a few things experienced IT managers suggest you consider:

Check system speed and scalability. Joe Feliu, vice president of operations and chief technology officer at AllAdvantage.com, uses Millennia Vision Corp. in Redwood Shores, Calif., to handle his company's Oracle-based financials and deploy customer relationship management software. Feliu says it's critical to grill a potential ASP on its ability to expand, in addition to evaluating cost and speed. "As small as we are, we went with a tier-one ASP and Oracle apps because we plan to grow," he says.

Don't push customization. Feliu advises against pushing an ASP to optimize or customize applications. "Flexibility must be your driver," he says.

Know when to control. Kathy Wong, technology director at branded clothing manufacturer Dunk.net Inc. in Santa Monica, Calif., advises that you keep things in-house if an ASP limits your ability to customize strategic applications and you think you'll need to change them. Dunk.net uses Oracle Corp.'s ASP subsidiary, Business Online, which helped it launch quickly.

Negotiate favorable payment terms. Feliu suggests structuring ASP contracts like a mortgage, with no prepayment penalty. He says customers should work early-escape clauses into contracts for competitive reasons or to create the flexibility to bring applications back in-house.

Avoid a culture clash. Culture clashes are another thing to look out for, advises Kevin Book, director of Web development at The Motley Fool. Book says one reason he chose USinternetworking as The Motley Fool's ASP was the smooth mesh of corporate cultures between the two companies.

– *Mark Hall*

TO HAVE AND TO HOLD

From customized jobs to flexible work policies to unlimited earnings potential, Best Places to Work are finding ways to make themselves too attractive for employees to leave. By Kim S. Nash

RETENTION

100 BEST PLACES TO WORK IN IT

THE WEAR AND TEAR of flying between Illinois and Texas to help care for his ailing grandparents, their ranch and their lumber business finally got to Todd Purifoy. He decided to quit his job as enterprise e-mail administrator at Chicago-based International Truck and Engine Corp.

"I wanted to get back closer to family," Purifoy says. "I told the company that I'd hang around for a month or two or however long it took to train a new person, but that I'm going to have to leave."

But International Truck didn't want to let him go. He was too good at handling the company's worldwide Windows NT e-mail system. So Purifoy's manager packed up, flew to Dallas and scouted out a field office to which Purifoy could relocate.

"We gave him the opportunity to telecommute and continue to do his job from Texas," explains Art Data, CIO at International Truck.

Data undersells the move, however. Not only did the company devise the plan, he says, but it also paid for an Integrated Services Digital Network line to Purifoy's Dallas home. Purifoy, who had been at International Truck for about one year when this happened in 1998, says he was surprised and grateful. And now he's dog-loyal.

"There are plenty of opportunities to work [at other companies] in Dallas in my position," Purifoy says. "But none remotely interest me because of the things that International Truck has helped me do."

That's what you call a successful information technology retention program. International Truck, which was called Navistar International Corp. until a name change in March, had an IT turnover rate of just 2.7% last year. Furthermore, 78% of the 610-member staff at the company have been there at least five years.

The $8.6 billion company is one of the best at retaining IT people. Data chalks it up to, among other things, flexible work policies and employee reward plans that let high-performing nonmanagers make more than their managers.

International Truck gets it. So do The Prudential Insurance Company of America, State Farm Insurance Cos., software maker SAS Institute Inc., bread maker The Earthgrains Co. and electronics manufacturer Hadco Corp. These firms tune into their employees' work/life preferences and create a menu of benefits, pay programs and extras that keep IT staff satisfaction high and turnover rates low.

> It's acceptable to go home at 4 p.m. for your kid's soccer game. You get hard-driving people who want to work all hours — they won't like it here. They'll be working all alone.
>
> JEFF CHAMBERS, DIRECTOR OF HUMAN RESOURCES, SAS INSTITUTE

The trick is for CIOs to think of their people as customers, at least to a certain degree, says Steve Brazile, CIO at Earthgrains in St. Louis.

"We know that everybody who works in our shop can get a job someplace else in town if they want to," Brazile says. Competitive pay and benefits are a given, but that kind of customer service mentality isn't.

Brazile says that as CIO, he tries to set a certain tone. "We want a clear mission and purpose," he says. "No crazy hours and unrealistic deadlines. We don't like yelling and screaming."

And what was the IT turnover at Earthgrains last year? Zero.

One innovative way Brazile keeps his 40 full-time IT professionals motivated is by offering them first dibs on projects that involve neat new technologies, such as Internet development.

"You get a lot of people with a lot of energy and they always want to work on new stuff," Brazile says. "You don't have set formulas [for who gets what plum assignment], but you try to make people happy."

Brazile says he also tries to keep personal tabs on his staff. He'll ask project managers about the hours team members work and whether they seem happy. "We appreciate dedication, but they have lives and families," he says. "You keep your eye out for those things."

Salary Still Counts

Money is obviously important. No one wants to be paid less than what they think they're worth — or what they think they can get elsewhere.

"You have to have the compensation," says Bill Friel, CIO at Prudential in Roseland, N.J. Friel oversees 5,200 IT workers. Prudential gave average compensation increases — salary plus bonus — of 9% in IT last year. But Friel says that equally important is the chance for IT people to learn technology and soft skills such as management training and how to do a presentation.

"If you can continue that knowledge growth for each individual's portfolio, that is the key thing" to maintain high retention, he says.

Friel measures his success carefully. He compares the IT turnover at Prudential — 9% last year — with that of the industry in general and of the Northeast, where Prudential is located.

Thirty-six years in the business have also taught him to monitor another statistic: what his top performers (the top 20% of his staff) are doing. These key IT staffers get special bonuses and management and technology training.

But Friel also runs an annual strategy session with the CIOs from Prudential's business units to determine how best to use the top talent. "We find interesting, challenging assignments for these people with important projects and make sure they are using exciting new technologies," he says.

Intangibles at Work

As critical as salary and education are to keeping IT staff happy and productive, there's a less tangible factor as well: work culture. How do managers make their priorities known? How do people at work act? Do people pull together?

Book fairs, quarterly dinners, bake-offs and special-service-recognition breakfasts are typical at Hadco in Salem, N.H. These events contribute to a happy and loyal IT staff and help create the family-style culture the company tries to promote.

When rains flooded out employees' families at Hadco's division in Owego, N.Y., two years ago, colleagues held potluck suppers and bake-offs to raise money for clothes and shelter.

Everyone seems to know everyone else. Many people have worked there for decades. "It's unusual for you to pass someone in the hall and not say, 'hi.' In other companies I've been in, the norm is not to acknowledge them," says Fred Chaloux, CIO at Hadco.

"People feel like it's family," adds Lorraine Peterson, Hadco's corporate human resources manager.

Geography has worked for most of *Computerworld*'s best IT retainers. State Farm, for example, is one of the largest employers in the Bloomington, Ill., area — an affordable farm-belt region with a high quality of life. The company offers relatively high salaries and abundant training programs.

"It's not easy for Joe Blow with a family and [who] works in our IT shop to pick up and go to the other side of town to get a job with the same opportunity and pay," notes Todd Smith, a human resources manager for IT recruiting at State Farm.

This gives the company an obvious staffing edge as the top dog in the region. But better pay and training are conscious efforts by State Farm to get and keep the best talent.

State Farm also seeks out people from other departments — and other vocations — for IT slots. They get technical training at a local university in a program cosponsored by State Farm. Terri Thompson, systems employment specialist at State Farm, says that in the IT department, "We've got a lawyer and school teachers. We've had a chiropractor and a banker."

The people at SAS Institute in Cary, N.C., like to think of themselves as a community and not simply co-workers. Mainly, that's because the company provides lots of lifestyle services at work for free or at greatly reduced costs.

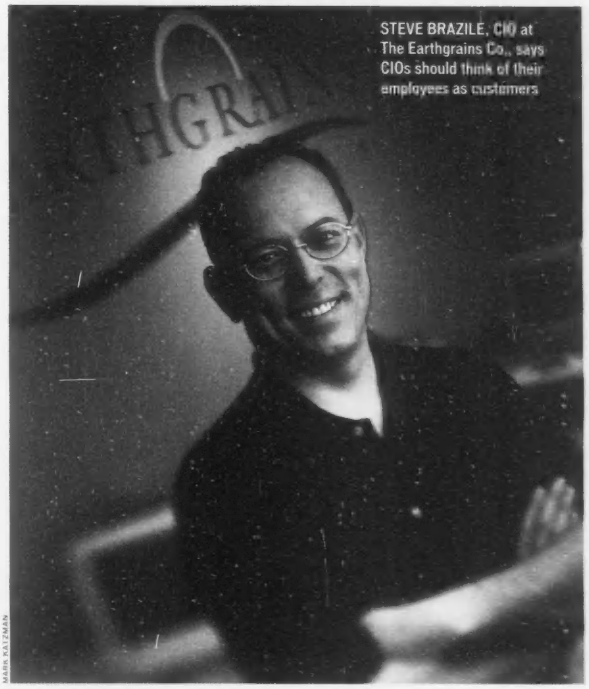
There's health care by two doctors and eight nurse practitioners on-site, dry cleaning, car washing, a credit union and a farmer's market. And 700 kids who attend on-site child care make for a lively cafeteria come lunchtime.

Moreover, the company encourages employees to have a life outside of work.

"It's acceptable to go home at 4 p.m. for your kid's soccer game," says Jeff Chambers, director of human resources at SAS Institute. "You get hard-driving people who want to work all hours — they won't like it here. They'll be working all alone."

Chambers won't divulge the price tag for these extras. But according to a study of the company by the *Harvard Business Review*, SAS Institute saves more than $50 million per year by providing such perks. Most of the savings comes from not having to recruit and train new employees.

An absence of strict corporate hierarchy is also part of the mix. Jim Goodnight, SAS Institute's CEO, isn't big on formality. Most employees aren't more than four or five management levels from the CEO. "People ask him questions in the hall," Chambers says. "Goodnight will talk to anybody."



STEVE BRAZILE, CIO at The Earthgrains Co., says CIOs should think of their employees as customers

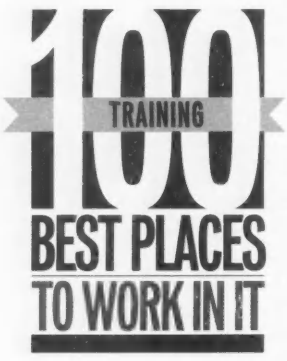
MARK RAUZMAN

Top 10 *Best companies to work in IT for retention*

Rank	Company name/retention program	IT turnover rate	IT staff employed 5 years or more
1	**The Earthgrains Co.** – Stock options program and full benefits offerings.	1%	90%
2	**State Farm Insurance** – Although it doesn't have an official employee-retention program, State Farm offers several incentives to retain employees such as performance bonuses, special-effort awards, special-achievement awards, relocation, competitive salaries and benefits, an excellent work environment and challenging and meaningful work with the opportunity to reach higher levels of responsibility.	4%	71%
3	**Federal Express Corp.** – Numerous programs are in place to encourage employee retention, from enhanced pay and benefits to amenities.	7%	64%
4	**International Truck and Engine Corp.** – Employee retention programs fall into the categories of education, benefits, flexible work schedules and telecommuting. Also, the company uses a recruiting bonus paid directly to an employee when new talent is brought in by the employee.	3%	78%
5	**Hadco Corp.** – No formal program, but it has a corporate culture attraction.	10%	60%
6	**The Prudential Insurance Company of America** – There are several companywide programs that reflect Prudential's commitment to retaining IT employees. We have several industry certification programs that are part of our world-class IT training program. Alternative learning options have been made available for staff, at on-site Learning Lab facilities and through Web connections, allowing IT staffers access anytime, anywhere to a wide array of Microsoft technologies. The IT compensation plan is flexible and adjusts merit-increase budgets according to market data, which is reviewed annually. The plan also calls for aggressive salary treatment for top performers. The LifeWorks Family Resource Program gives employees confidential support for the questions, pressures and issues they face while trying to balance work, family and personal responsibilities.	9%	63%
7	**Hewlett-Packard Co.** – No formal retention program, but the competitive benefits and training offerings are principal retention tools.	15%	80%
8	**SAS Institute Inc.** – "If you treat employees as if they make a difference to the company, they will make a difference to the company." That has been the employee-focused philosophy behind SAS Institute's corporate culture since the company's founding in 1976. At the heart of this unique business model is the idea that satisfied employees create satisfied customers. With amenities like individual offices for each employee and on-site health care, fitness facilities and child care as well as human resources practices that allow employees to transfer to new positions within the company, the work atmosphere fosters creativity and encourages innovation. Benefits like those directly contribute to the fact that SAS annually retains more than 95% of its employees . . . and 95% of its customers.	3%	50%
9	**Freddie Mac** – Individual situations are reviewed on a case-by-case basis. In some instances, employees are given stock options, equity raises or salary adjustments. There is also an ISS Leadership Development Program.	12%	52%
10	**The Home Depot Inc.** – Core values, shared business direction, health club membership, team outings, training, options, mentoring, rotating assignments, town hall meetings and one-on-one meetings with senior management.	4%	98%

KEEPING YOUR STAFF MARKETABLE

More perks and bigger paychecks are always nice, but IT professionals value training from their employers the most. The Best Places to Work are willing to take that big risk of keeping staffers on top of current hot skills. By Erik Sherman



WHEN Torbjorn Dimblad considered job offers in 1997, training was upmost on his mind. After all, there wasn't much call from information technology shops for his major in Asian studies. But he had taken exactly one computer class in college, and he wanted to work in technology. That's why he took a job at PricewaterhouseCoopers.

"The opportunity to spend [10 weeks] getting up to speed was a big consideration," says Dimblad.

The Training Imperative

Starting a first-day employee immediately on two-and-a-half months of training classes may seem accommodating to the point of humor, but leading IT shops aren't laughing. Such companies have found that to recruit good candidates, retain employees and obtain the highest-quality work, creating training opportunities is as necessary as providing competitive salaries and benefits.

Certainly, Dimblad's background is relatively rare at New York-based PricewaterhouseCoopers. Most new employees majored in computer science or information management. Yet all receive extensive training to both learn the company's methodology and to pick up some additional background in business processes.

There's also training in project management and other consulting skills. Much of the learning happens at the firm's primary training center in Tampa, Fla. The yearly average cost for all employee training is $7,500.

As a result, the training has become a big draw for potential employees, and not just for those right out of college, according to Kathy Macesich, a technology solutions training capability manager at PricewaterhouseCoopers.

Not all companies use training aggressively in their recruiting, however. A number of the Top 100 say that training is more like a required checklist item for potential employees.

"I don't think it's something that we flaunt, because we don't have a promise or expectation. Training is part of a package that shows employees that they'll be supported in growing in their jobs," says Laurie X Wayne, manager of the IT learning group at San Jose-based Cisco Systems Inc.

New Ways to Deliver Training

Still, even when a company doesn't parade training, employees look hard for it. To remain competitive in IT, people must continue to add new skills and hone old ones. That's why learning opportunities become a must for employee retention at all the top IT shops.

Opening up those opportunities can be difficult with the pressure of daily business. In response, some companies offer traditional training and supplement it with computer-based training and Web offerings over an intranet.

Cisco has 2,000 IT employees and provides them with an average of 10 training days per year. Training topics include products, technical skills and "soft" skills, such as holding effective meetings and conflict resolution. "A big thrust for us is e-learning," says Wayne about Cisco's 135 electronic courses. "People can take [those] anytime they want."

While many other companies may be adding Web- and computer-based training to the mix, few are allowing employees to enroll in training courses by filling out an electronic form on their browsers, as Cisco does. Requests for classes are then routed to the appropriate managers for approval.

Measuring the Results

Signing up may be painless, but judging the effectiveness of training isn't. Although providing learning opportunities is important in recruiting and retaining employees, companies must be sure that courses match business needs as well.

Some companies, like Computer Associates International Inc. in Islandia, N.Y., rely on external measurements of achievement. "In terms of IT skills, one of the first ways we measure is through certification," says Kevin Long, vice president of employee development at CA. "The goal is to become an MCSE or a certified Unicenter engineer."

With certifications in place, managers can further determine whether or not employees can perform particular jobs. CA wants employees to spend a "bare minimum" of 80 hours, or two work weeks, per year in classes. The company also takes a rare step of setting up simulation environments.

"In a day or five days in the simulator, we can have someone experience some of the tasks that might take them six months of field work [to see]," explains Long.

Drives toward training and certification can start as soon as employees walk through the door. Andy Chandler,

> Seventy-two percent of the people hired last year said [training] was one of top two factors in making their decisions.
>
> KATHY MACESICH, TECHNOLOGY SOLUTIONS TRAINING CAPABILITY MANAGER, PRICEWATERHOUSECOOPERS

a senior Unix systems administrator, started at CA in early January. "I've taken the full Sun Solaris systems administration [course] and been certified," says Chandler, who plans on also obtaining Unicenter certification.

Many companies also use "smile sheets," or surveys, at the end of a course. Such instruments may have their place but don't always tell a full story. Avon Products Inc. in New York, which tries to budget 10 days of training per IT employee per year, uses smile sheets as well as more extended assessments.

"We do some random contacting of people a month after the class has taken place," says Frank Chiappetta, Avons' manager of global technology education services, who checks to see if employees are using the training. Because of Avon's corporate culture, employees also stop him in the hall or cafeteria to talk about training experiences.

Cheryl Rykowski, manager of global organizational learning at Avon, provides soft-skills training to IT employees. She completely skips the smile sheets, having formerly used surveys. "I never got anything less than a four [out of five]," she remembers. Rykowski says she gets the best feedback from informal questions months after employees have taken a class.

Informal Advances

Such informal employee education and mentoring have become a major force in training at leading companies.

"We have a goal of 10% of your time to be spent on training," says Bridgette Deboer, a division manager at Wal-Mart Stores Inc. With per-IT employee training taking an impressive 25 or so days per year, the company might run the risk of being chronically understaffed if all the training were to take place off-site. Although the Bentonville, Ark.-based retail chain offers such courses, there's also emphasis on more informal methods of training.

"The informal training tends to be a little bit more useful in our situation right now," says Aaron Tunnell, a systems programmer at Wal-Mart. "The formal training is geared more toward . . . learning more about the methodologies."

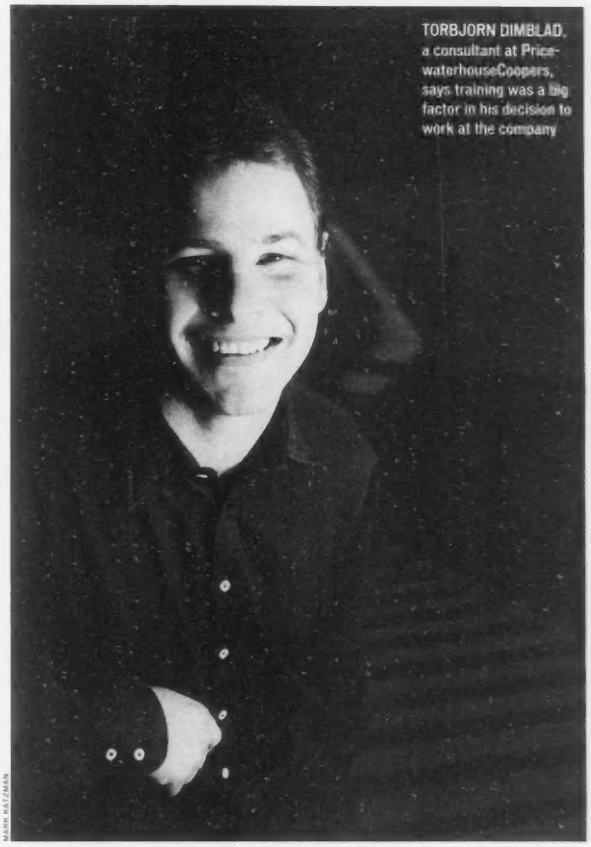
Mentoring programs and hands-on practice give Tunnell a chance to try technology at work. "Methodologies are great, but they aren't useful if you can't employ them in your own environment," he says.

Although IT employees desire training, it's easy to forget how much of a chore it can become at times. CDW Computer Centers Inc. develops IT workers to become project leaders and managers through its managers-in-training program.

An in-house series of management classes teaches leadership skills that range from using different management styles to interviewing techniques and annual appraisal methods. "There is no limit on what we will invest to train coworkers," says Susan Fischer, manager of e-commerce marketing at the Vernon Hills, Ill.-based company.

Whereas employees already in management have to take 14 courses over 18 months, those in the managers-in-training program work in a one-year, compressed time frame. "It's definitely a big challenge to manage everything else you're doing and take this time to improve yourself, which will help you improve your staff," says Chris Jannick, an IT operations manager at CDW, who is still putting in an extra hour or two per day for further training. "So far it's been worth it."

Sherman is a freelance writer in Marshfield, Mass.



MARK KATZMAN

TORBJORN DIMBLAD, a consultant at PricewaterhouseCoopers, says training was a big factor in his decision to work at the company

Top 10

Best companies to work in IT for training

	Computer Associates International Inc.	CDW Computer Centers Inc.	First Third Bancorp	The Home Depot Inc.	Pricewaterhouse-Coopers	Capital One Financial Corp.	Cisco Systems Inc.	Avon Products Inc.	Harley-Davidson Inc.	Wal-Mart Stores Inc.
Offered in training plans	1	2	3	4	5	6	7	8	9	10
Average days of training	21	18	45	17	19	20	10	12	20	25
Average cost of training	$24,000	$20,000	$7,875	$9,000	$7,500	$6,500	$10,000	$10,000	$4,000	$4,500
Increase in training budget	20%	50%	20%	18%	24%	0%	10%	25%	20%	5%
Wireless networks	✖	✖	✖	✖	✖	✖	✖	✖		
Storage-area networks	✖	✖	✖			✖	✖	✖	✖	✖
Next-generation directories	✖	✖			✖	✖	✖	✖	✖	
XML	✖	✖		✖	✖	✖	✖	✖	✖	
Windows 2000	✖	✖	✖		✖	✖	✖	✖	✖	
Linux	✖	✖		✖	✖	✖	✖			
Application development	✖	✖	✖	✖	✖	✖	✖	✖	✖	✖
Internet development	✖	✖	✖	✖	✖	✖	✖	✖	✖	✖
E-commerce development	✖	✖	✖	✖	✖	✖	✖	✖	✖	✖
Data warehousing	✖	✖	✖		✖	✖	✖	✖	✖	✖
Management training	✖	✖	✖	✖	✖	✖	✖	✖	✖	✖
Presentation skills			✖	✖	✖				✖	✖
Verbal/written skills			✖	✖						✖

Business Metrics

BY STEVE ALEXANDER

THERE MAY BE no substitute for profits, but companies have begun to measure success in other, less traditional ways.

To do so, they are turning to information technology to develop tools that can find the answers to a wide range of tough questions about their businesses: Are customers getting timely deliveries? Are employees satisfied? Do suppliers feel they're treated fairly?

This shift represents a sea change in business thinking, according to Kamal Haddad, a professor of finance at San Diego State University and a researcher on the Balanced Scorecard concept, which combines both traditional and nontraditional metrics of business success.

"In the past, companies focused only on financial measures, such as return on investment. They were backward-looking measures, but they served their purpose," Haddad says. "But with the arrival of business process re-engineering, things changed and firms needed to focus on driving future performance. The old business measures don't serve that purpose, but the Balanced Scorecard does."

The Bottom Line

In fact, say some management consultants, the Balanced Scorecard can play a big role in a firm's bottom line.

William Schiemann, chairman and CEO of management consulting firm Metrus Group Inc. in Somerville, N.J., and co-author of *Bullseye! Hitting Your Strategic Targets Through High-Impact Measurement*, says companies that use Balanced Scorecard business metrics have a better return on investment than those that rely only on the traditional financial measurements of a company's health.

What's more, he says, firms using the Balanced Scorecard have greater success in managing organizational changes such as restructuring, mergers and acquisitions, and business process re-engineering.

"The quality and accuracy of these [nontraditional] things can be measured," Schiemann says. "For instance, there are very good techniques today to measure how much a change in employee satisfaction affects changes in customer loyalty and what impact that has on the company's bottom line."

For example, at a bank, where there's typically a lot of employee-customer interaction, a 10% downturn in employee satisfaction might result in a 3% to 4% loss of customers, Schiemann says. The loss of that many customers could subtract about 1% from the bank's net earnings, he says.

Sometimes nontraditional measurements uncover hidden business problems that are based on what people believe, not necessarily on what is true, Schiemann says.

"Say your product has a defect one out of 10 times," he explains. "If your customers think it's four out of 10, that's what drives their behavior."

Haddad says another useful metric is "citizenship," in which a company tries to measure its contributions to the community. It counts the number of employees involved in social programs and the dollar contributions the firm makes to those programs.

The Big Picture

One big IT shop that believes in the Balanced Scorecard model is Nabisco International Inc. in East Hanover, N.J.

In Nabisco's IT department, Donna Dietz, vice president in charge of enterprise relationship management, uses a Balanced Scorecard that measures IT's success in areas such as supply-chain management, marketing systems, help desk, development projects, data center operations, data networking and remote connectivity. The company is also developing a measurement for salary competitiveness.

"By measuring the things we do, we think we can understand exactly what is happening in the various functional areas of IT," Dietz says.

"For example, in our marketing systems, we measure things like systems usage — how often are systems available to users, how many help desk tickets are there on these systems?" she explains. "Then we discuss that with the people in the business who are our users and ask them if that is acceptable. Then we set goals in partnership with the business customers.

"This information also will enable us to benchmark ourselves against other companies and IT departments," Dietz says. "We want to see how we compare to other food companies, other large corporations and the best-in-class companies."

While other firms might not willingly share their benchmarking information, consultants can provide that data, she says.

The fact that Nabisco has a long history of measuring its performance against that of competitors bolsters its IT effort. It gathers grocery store sales data about its own and competing products, stores the data in dedicated data warehouses and lets businesspeople use online analytical processing tools to view it. Nabisco's IT staff is considering using some third-party software to help gather information for its business metrics but hasn't made any final decisions.

Getting Results

How quickly can companies expect bottom-line results from the Balanced Scorecard?

The effort at Nabisco, now 6 months old, is too new to have produced results, Dietz says.

Schiemann says initial positive results can show up in as little as six months, while dramatic improvements take a full year. If there's been no change in three years, either the company has been taking the wrong measures or hasn't gotten all its employees to buy in to the process, he says.

How can you tell if you have buy-in from employees? Ask them, Schiemann says. "If you can ask a person on the shop floor or a person programming code, and they can tell you three to four of their objectives, how those tie in to the company's performance and what the measures of achieving those objectives are, you've got it."

Alexander is a freelance writer in Minneapolis. Contact him at sorion99@yahoo.com.

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In addition to looking at the bottom line, companies can gauge their success by measuring other areas.

Things that need to be measured:

1. Overall satisfaction and commitment
2. Performance
3. Workforce capabilities

Ways of measuring:

1. Surveys that study rewards, training, process improvement and goal clarity
2. Surveys that study confidence in leadership, recognition and rewards, safety climate, teamwork, fair treatment, supervision and open communication
3. Quantifying workforce capabilities such as employee growth and organizational learning
4. Measuring acceptance of core values such as customer service, cost consciousness, innovation, diversity, ethics and integrity

SOURCE: METRUS GROUP INC., SOMERVILLE, N.J.

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JOE AUER/DRIVING THE DEAL

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Never tell a vendor:
- How much you're willing to spend or what your budget is.
- It's a strategic partner.
- You have a deadline for the project.
- You *love* its product.
- "We don't need to write that down. I trust you."
- Your profit margins.
- Who its competitors are.
- Who won the bid.
- It's the only vendor being considered, even if it is.
- You need its product.
- The bids you received from other vendors.
- That you prefer its product over competitors' products.
- Anything that could give it leverage during the final decision-making process.
- You'll sign the deal now and work out the details later.
- Exactly how much you plan to buy.
- You're new to negotiations.
- You'll start with its contract.
- Its price is reasonable.
- It has "locked in" your business, even after the deal is signed.

A member of CAUCUS who works at a large company in the Midwest sent me that list recently.

If you have any great negotiation truths, please send them on. We'll all appreciate sharing what you've learned.

Mail Bag

Remember the auto manufacturer that was getting squeezed by an unscrupulous vendor for a ZIP-code software program upgrade fee [Business, July 5]?

The customer had received several upgrades as part of the deal, and a precedent had been set. But suddenly, an upgrade came with a whopping unannounced surprise — a $49,000 price tag.

Well, that story made one of the readers of this column have a flashback.

Frank Hough, a senior contracts consultant at Computer Sciences Corp., recently sent in this story:

We were running a software product from a very small vendor on a machine that we needed to upgrade — in a relatively short period of time — to increase our computing power. The software, with an embedded password keyed to the processor serial number, was critical to a vital business application.

To move the software to an upgraded CPU, we needed a new password that only the vendor could supply.

Our license agreement clearly stated we had the right to upgrade our computers and to receive new passwords at no charge. Each time we requested a new password from the vendor, we received a promise — from the president of the company — that it would be delivered, but no password came.

This went on for several weeks.

Finally, within a few days of our processor upgrade deadline, the vendor's president said he wouldn't honor the agreement and demanded we negotiate a new agreement for more money.

I brought in our lawyers, and the vendor engaged his outside counsel.

As we battled, we asked our technical wizards to find a work-around — and fast.

The vendor never relented. Within eight hours of our seeking an injunction against the vendor, our techies found the work-around.

I found out later that the president felt cheated by the deal he'd signed years earlier because we had never purchased the volume he expected.

I have no idea if misleading promises were made to the vendor or business plans changed, which lowered the volume purchased.

Here's what I learned from this: **1.** *The best agreement in the world won't protect you completely from unethical behavior.* **2.** *When negotiating a deal, don't make commitments you can't deliver on, or they may come back to haunt you.*

By the way, after the workaround, we kept operating and dropped all discussion with the vendor. Within 12 months, we had de-installed the vendor's product.

Thanks for sharing, Frank. No one tells it better than someone who's been there.

JOE AUER is president of International Computer Negotiations Inc. (*www.dobetterdeals.com*), a Winter Park, Fla., consultancy that educates users on high-tech procurement. ICN sponsors CAUCUS: The Association of High Tech Acquisition Professionals. Contact him at [redacted]

BRIEFS

Doc Management Firm Forms Online Business

Standard Register Corp. in Dayton, Ohio, has launched Smartworks.com Inc., a Web site where companies can procure printing and document management products and services. The site, created by Standard Register's e-commerce group, will be set up as a separate subsidiary and target business customers that spend more than $250,000 per year on printing.

APBnews.com Begins Search for Investors

APBnews.com, a privately held, New York-based online news site focused on the criminal justice system, announced it has run out of cash and is looking for new investors. CEO Marshall Davidson attributed the company's problems to recent blows suffered by technology stocks. Publicly traded online news sites such as San Francisco-based Salon.com and New York-based TheStreet.com Inc. have suffered falling stock values in recent weeks as well.

Recruiter: CEOs Fleeing Consumer Market

Recruiting firm Christian & Timbers in Cleveland says the recent dive of the Nasdaq Stock Market has CEOs of business-to-consumer Internet start-ups looking for the next big thing. "B-to-C is no longer the hottest market space in the new economy, and CEOs are looking to get out," said Christian & Timbers Chairman and CEO Jeffrey Christian. He said that CEOs no longer think business-to-consumer firms will pay off and that they're leaving to run Internet infrastructure businesses capable of sustained financial performance.

Online Book Sales Up

The number of books sold over the Internet has nearly tripled since 1998, according to a survey released earlier this month by The NPD Group Inc. in Port Washington, N.Y. About 57 million books were sold online last year, the study found. The report was commissioned by the American Booksellers Association in Tarrytown, N.Y., and was presented at the annual BookExpo America convention in Chicago earlier this month.

SAP Adds Contractor Service to MySAP.com

SAP America Inc. is partnering with Vivant Corp. to add contractor services to its mySAP.com digital marketplace. Beginning this fall, mySAP.com users will be able to define projects, hire contract workers, negotiate payments and analyze project results online. Vivant is an Oakland,Calif.-based business-to-business Internet marketplace that matches contract information technology workers with projects.

MTI Names Hoffman Vice President

MTI Technology Corp., a data management and storage firm in Anaheim, Calif., has named Edwin Hoffman vice president of North American support services. He will be responsible for managing and creating the firm's professional services organization. Hoffman has more than 26 years of sales and engineering support experience, including positions at Digital Equipment Corp. and Cabletron Systems Inc.

Worldwide VoIP Network Planned

NorthVoice Communications Inc. in Richmond, British Columbia, last week announced a $5 million contract with Lucent Technologies Inc. in Murray Hill, N.J., for hardware and software for the initial stages of its global voice over IP (VoIP) network. NorthVoice said it will build the largest private international VoIP network globally in two phases, with the first phase serving 81 cities on three continents, starting this year.

Hitachi Data Systems Opens New Facility

Hitachi Data Systems, a wholly owned subsidiary of Tokyo-based Hitachi Ltd., recently opened a distribution and warehouse facility in Plainfield, Ind. It will offer all of Santa Clara, Calif.-based HDS's products, from software to enterprise storage subsystems, serving the U.S., Canada, Latin America and Asia. The new facility, which replaces centers in San Jose and Laurel, Md., currently has 85 employees and will be fully staffed with 200 employees within two to three years.

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- "We don't need to write that down. I trust you."
- Your profit margins.
- Who its competitors are.
- Who won the bid.
- It's the only vendor being considered, even if it is.
- You need its product.
- The bids you received from other vendors.
- That you prefer its product over competitors' products.
- Anything that could give it leverage during the final decision-making process.
- You'll sign the deal now and work out the details later.
- Exactly how much you plan to buy.
- You're new to negotiations.
- You'll start with its contract.
- Its price is reasonable.
- It has "locked in" your business, even after the deal is signed.

A member of CAUCUS who works at a large company in the Midwest sent me that list recently.

If you have any great negotiation truths, please send them on. We'll all appreciate sharing what you've learned.

Mail Bag

Remember the auto manufacturer that was getting squeezed by an unscrupulous vendor for a ZIP-code software program upgrade fee [Business, July 5]?

The customer had received several upgrades as part of the deal, and a precedent had been set. But suddenly, an upgrade came with a whopping unannounced surprise — a $49,000 price tag.

Well, that story made one of the readers of this column have a flashback.

Frank Hough, a senior contracts consultant at Computer Sciences Corp., recently sent in this story:

We were running a software product from a very small vendor on a machine that we needed to upgrade — in a relatively short period of time — to increase our computing power. The software, with an embedded password keyed to the processor serial number, was critical to a vital business application.

To move the software to an upgraded CPU, we needed a new password that only the vendor could supply.

Our license agreement clearly stated we had the right to upgrade our computers and to receive new passwords at no charge. Each time we requested a new password from the vendor, we received a promise — from the president of the company — that it would be delivered, but no password came.

This went on for several weeks.

Finally, within a few days of our processor upgrade deadline, the vendor's president said he wouldn't honor the agreement and demanded we negotiate a new agreement for more money.

I brought in our lawyers, and the vendor engaged his outside counsel.

As we battled, we asked our technical wizards to find a work-around — and fast.

The vendor never relented. Within eight hours of our seeking an injunction against the vendor, our techies found the work-around.

I found out later that the president felt cheated by the deal he'd signed years earlier because we had never purchased the volume he expected.

I have no idea if misleading promises were made to the vendor or business plans changed, which lowered the volume purchased.

Here's what I learned from this:

1. *The best agreement in the world won't protect you completely from unethical behavior.*
2. *When negotiating a deal, don't make commitments you can't deliver on, or they may come back to haunt you.*

By the way, after the work-around, we kept operating and dropped all discussion with the vendor. Within 12 months, we had de-installed the vendor's product.

Thanks for sharing, Frank. No one tells it better than someone who's been there.

JOE AUER is president of International Computer Negotiations Inc. (*www.dobetterdeals.com*), a Winter Park, Fla., consultancy that educates users on high-tech procurement. ICN sponsors CAUCUS: The Association of High Tech Acquisition Professionals. Contact him at joea@dobetterdeals.com.

BRIEFS

Doc Management Firm Forms Online Business

Standard Register Corp. in Dayton, Ohio, has launched Smartworks.com Inc., a Web site where companies can procure printing and document management products and services. The site, created by Standard Register's e-commerce group, will be set up as a separate subsidiary and target business customers that spend more than $250,000 per year on printing.

APBnews.com Begins Search for Investors

APBnews.com, a privately held, New York-based online news site focused on the criminal justice system, announced it has run out of cash and is looking for new investors. CEO Marshall Davidson attributed the company's problems to recent blows suffered by technology stocks. Publicly traded online news sites such as San Francisco-based Salon.com and New York-based TheStreet.com Inc. have suffered falling stock values in recent weeks as well.

Recruiter: CEOs Fleeing Consumer Market

Recruiting firm Christian & Timbers in Cleveland says the recent dive of the Nasdaq Stock Market has CEOs of business-to-consumer Internet start-ups looking for the next big thing. "B-to-C is no longer the hottest market space in the new economy, and CEOs are looking to get out," said Christian & Timbers Chairman and CEO Jeffrey Christian. He said that CEOs no longer think business-to-consumer firms will pay off and that they're leaving to run Internet infrastructure businesses capable of sustained financial performance.

Online Book Sales Up

The number of books sold over the Internet has nearly tripled since 1998, according to a survey released earlier this month by The NPD Group Inc. in Port Washington, N.Y. About 57 million books were sold online last year, the study found. The report was commissioned by the American Booksellers Association in Tarrytown, N.Y., and was presented at the annual BookExpo America convention in Chicago earlier this month.

SAP Adds Contractor Service to MySAP.com

SAP America Inc. is partnering with Vivant Corp. to add contractor services to its mySAP.com digital marketplace. Beginning this fall, mySAP.com users will be able to define projects, hire contract workers, negotiate payments and analyze project results online. Vivant is an Oakland,Calif.-based business-to-business Internet marketplace that matches contract information technology workers with projects.

MTI Names Hoffman Vice President

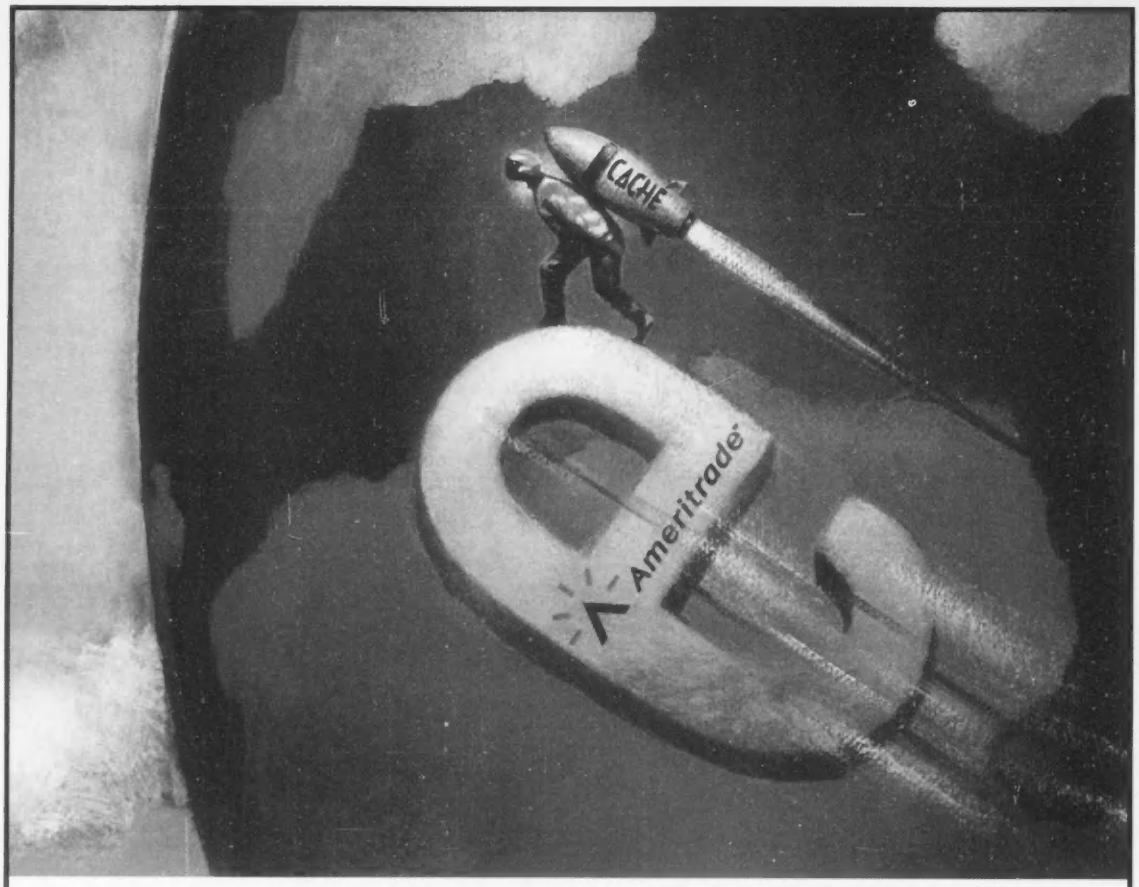
MTI Technology Corp., a data management and storage firm in Anaheim, Calif., has named Edwin Hoffman vice president of North American support services. He will be responsible for managing and creating the firm's professional services organization. Hoffman has more than 26 years of sales and engineering support experience, including positions at Digital Equipment Corp. and Cabletron Systems Inc.

Worldwide VoIP Network Planned

NorthVoice Communications Inc. in Richmond, British Columbia, last week announced a $5 million contract with Lucent Technologies Inc. in Murray Hill, N.J., for hardware and software for the initial stages of its global voice over IP (VoIP) network. NorthVoice said it will build the largest private international VoIP network globally in two phases, with the first phase serving 81 cities on three continents, starting this year.

Hitachi Data Systems Opens New Facility

Hitachi Data Systems, a wholly owned subsidiary of Tokyo-based Hitachi Ltd., recently opened a distribution and warehouse facility in Plainfield, Ind. It will offer all of Santa Clara, Calif.-based HDS's products, from software to enterprise storage subsystems, serving the U.S., Canada, Latin America and Asia. The new facility, which replaces centers in San Jose and Laurel, Md., currently has 85 employees and will be fully staffed with 200 employees within two to three years.



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QUESTIONS ABOUT OPEN IP

Nortel Networks has unveiled a new version of Open IP, a plan to distribute routing among many network devices. But some users and observers aren't sure it's a good idea to turn devices such as servers into routers. ▸ 68

LEARNING ABOUT GEOGRAPHY

As vendors better coordinate application integration with geographic analysis tools, installation and use are getting easier, and costs are going down. This means that even small users such as a Dallas credit union are realizing the strategic advantage of geographic analysis. ▸ 68

NEW MICROSOFT SERVERS

With seven new server packages aimed at easing and speeding e-commerce development, Microsoft is changing its server platform. Monolithic server packages running on big iron are giving way to numerous commodity servers with fewer features. ▸ 69

MORE BANDS

Delegates to the World Radio Conference approved new frequencies for GPS, which will lead to greater positioning accuracy. They also designated three new bands for next-generation mobile services, which could spur development of the go-anywhere world phone. ▸ 70

HACK OF THE MONTH

It's frighteningly easy for a hacker to steal your domain name. One way to protect yourself: Use a registrar that requires phone or paper-based confirmation of ownership changes. ▸ 71

QUICKSTUDY

Bluetooth is a low-cost, short-range radio link between laptops, mobile phones, network access points and other devices. It can replace cables, be used to create ad hoc networks and provide a standard way to connect devices anywhere in the world. ▸ 73

FUTURE WATCH

Running the biggest applications in the world creates some of the largest data management problems for scientists at Lawrence Berkeley National Laboratory. Using tape systems and a data management architecture called STACS, they're able to keep performance high while controlling costs. ▸ 74

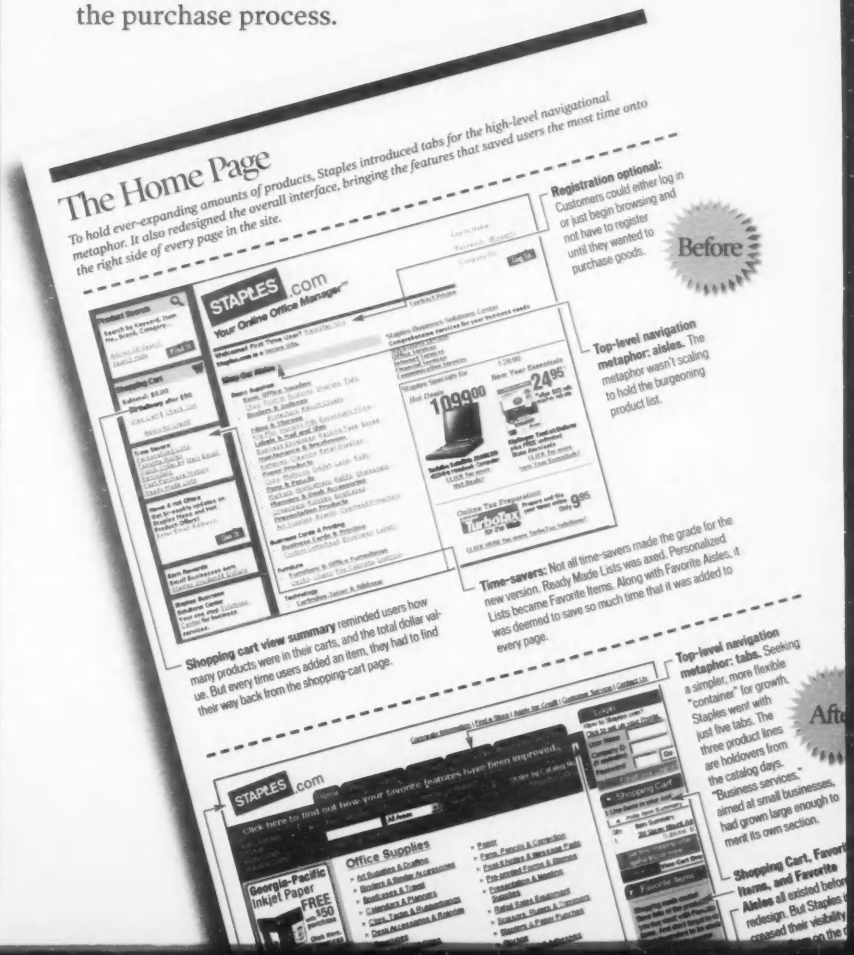
EMERGING COMPANIES

The paranoia over denial-of-service attacks has placed new demands on IT managers for higher levels of security. Start-up RIPTech Inc.'s remote monitoring and response services promise to eliminate those headaches as well as expensive investments in security products and personnel. ▸ 80

STAPLES KEEPS ON CLICKING

OFFICE SUPPLY SUPERSTORE Staples is constantly refining its Web site to make it easier for customers to shop online and help them complete their purchases quickly. In its most recent redesign, the Framingham, Mass.-based retailer added more information to some parts of its site, simplified other areas to speed navigation and designed new tools such as a Favorites list to speed the purchase process.

76



Users, Analysts Unsure of Nortel's Open IP Plan

Company says it will save money, but some question suitability, open standard

BY JAMES COPE

NORTEL Networks Corp. is trying to persuade network administrators to employ a technology that isn't quite proven to solve a problem that isn't quite here.

The technology is Open IP, a suite of Nortel software that uses many devices throughout a network to deal with the packet handling now mostly done either at the edge of networks or their core.

Nortel, in Brampton, Ontario, claims that doing packet handling locally is more cost-effective than passing the packets to a dedicated device, such as a router, to send them to their destination.

This would help networks handle future increases in Web traffic, Nortel claims, as well as new types of traffic.

But the message from Nortel about what exactly Open IP is, what it does, who should buy it and why users should care has some industry observers baffled.

Some users, such as Charlie Boyle, director of research and development at Digex Inc. in Beltsville, Md., are skeptical about using devices that were designed for other purposes, such as application serving, for routing data packets. "It seems to me [Nortel is] trying to push routing services into the host [server] instead of the router. I don't want my Sun server doing routing," he said.

On the other hand, he said, distributing routing capabilities among multiple devices might make it easier to link new data sources, such as handhelds, to a network.

"We're already starting to get away from big-intelligence routing," done mostly at the network core, Boyle said. Layer 7 switches, for example, perform some routing capabilities at the edge of networks by deciding which server should respond to requests for specific applications or data.

Nortel announced Open IP Version 2.0 last month. It includes open application programming interfaces to link Open IP routing functions to underlying operating systems and processors.

Open IP has had low visibility with many information technology managers because, until now, Nortel has licensed it mainly to companies that build chips used in the network hardware IT managers purchase. Those vendors include Intel Corp., IBM and Motorola Inc. in Schaumburg, Ill.

Another point of concern is that Open IP isn't truly open, because developers who want to create routing applications based on it have to purchase the software.

Nortel wouldn't pin a price on Open IP, but a company spokesman said, "There's a basic licensing fee and then a charge for each network processor or device in which it's used."

Ron Westfall, an analyst at Current Analysis Inc. in Sterling, Va., said he sees Open IP as a way for Nortel to influence the router market while acknowledging that Cisco Systems Inc. will keep a large part of network hardware sales.

"While Cisco is the undisputed leader in the routing code market, its [Internet operating system] technology is proprietary and bound to the company's routing products," Westfall said.

"The bottom line from an end-user perspective involves the next wave of embedded IP technology," said Laurie Gooding, an analyst at Cahners In-Stat Group in Newton, Mass. "Taking the router code and putting it in end-user devices simplifies access to information and other people."

What Nortel is doing with Open IP could also be as much about marketing as it is about technology, said Gooding.

"Cisco started getting its mind share by [portraying] what Nortel and Lucent were doing as old-world telephone company technology," Gooding said. Now Nortel in its Open IP announcements compares Open IP to "old-world routing."

"Nortel may be trying to turn the tables on Cisco," she said. "History would indicate that Cisco will dominate, but I credit Nortel with having the savvy to say 'We can play that game, too.'"

AT A GLANCE

Open IP Environment

A set of IP routing and internetworking software applications

- **What it is:** Open IP is a software suite aimed at adding routing intelligence to more devices on a network, thereby lightening the load on traditional routers on the network border and in the core.
- Can be used to create IP routing intelligence for network processors used in switches and routers.
- May also be used to speed routing by placing IP routing intelligence in devices that connect to a network, such as telephones or personal digital assistants.
- Nonproprietary in that any developer can purchase a license to use Open IP.
- Competes with Cisco's IOS software platform, which is used only by Cisco and only in Cisco devices.

Credit Union Maps Out Competitive Edge

App helps group break out of niche

BY CHRISTINE MCGEEVER

Last month, the Dallas Teachers Credit Union (DTCU) went from a customer base of 250,000 professional educators to a pool of 3.5 million potential customers, a change the credit union says gives it a fighting chance against the likes of Wells Fargo Bank and Bank of America, both of which have a strong presence in Dallas.

How? DTCU used new geographical data and analytical tools to find ways to improve its competitive position, a technique usually associated with banks and corporations that have large information technology staffs and budgets.

But the nonprofit DTCU was able to do this because vendors' integration of geographical analysis applications with database engines or applications is easing installation and use, and bringing costs down, according to a bank official.

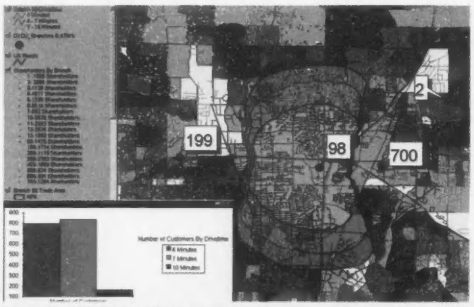
"We're the first small institution to go the [geographical data analysis] route, although Bank of America, Chase [Manhattan Bank] and other large financial institutions have taken it on," said Jerry Thompson, senior vice president and CIO at DTCU. Thompson declined to disclose the cost of the project. "We're now competitive with Wells Fargo and [Bank of America]," he added.

According to analyst Mark Smith at Meta Group Inc. in Stamford, Conn., software for analyzing geographical data can often be simply added to an existing database application server. Increasingly, database vendors are forging alliances with geographic information system application makers, strengthening the integration between the two technologies and bringing down the cost of implementation, Smith said.

DTCU replaced a standalone financial database system with IBM's business intelligence suite, Intelligent Miner, and DB2 on a Netfinity 7000-M10 server running Windows NT. It used IBM's Visual Warehouse to load its existing customer data into the data warehouse. Then the credit union purchased supplementary data compiled by Acxiom Corp. in Little Rock, Ark., to correlate credit scores, lifestyle statistics and locations of residents in the credit union's area.

Using analytic applications from Business Objects Inc. and ESRI's ArcView spatial mapping application, the credit union identified the top 10% of current profit-generating customers. It also identified customers' willingness to drive to a branch to do business by correlating where customers live to branch locations and the time it takes to drive the distance between the two.

Now that the credit union won its bid from a state commission to become a community bank, it will use its technology to provide "a heavy-duty marketing component" that is as important, if not more important, than the operational benefits, according to Thompson.



DALLAS TEACHERS CREDIT UNION uses a geographical analysis application to determine how members visit its branches

New Servers Expand, Integrate Web Apps Platform

Microsoft's e-commerce strategy is its most ambitious

BY RUSSELL KAY

In his trademark low-key manner, Microsoft Corp. Chairman and Chief Software Architect Bill Gates last week unveiled the ambitious architectural structure of a family of new and upgraded servers and development tools for Windows 2000 — all aimed squarely at driving and developing e-commerce applications.

ANALYSIS

Before the advent of Windows 2000, Microsoft's game plan was to make its server operating systems more and more comprehensive. Now the company is unbundling features and distributing operational control out to numerous small servers. This is a change of remarkable scope that will see the company introduce, in beta form, an unprecedented number of major new products this year. However, several Microsoft spokesmen cautiously noted that no final product will be shipped until it's ready.

Seven software-server packages are designed to run under one of the Windows 2000 server operating systems: Server, Advanced Server or Datacenter Server. The packages make up the applications platform Microsoft calls Windows DNA, for Distributed Internet Application architecture.

Two brand-new packages are Application Center Server 2000 and BizTalk Server 2000, while upgraded and expanded offerings include Commerce Server 2000, Host Integration Server 2000, Internet Security and Acceleration Server 2000, SQL Server 2000 and Exchange 2000 Server.

The new servers, together with new development tools in Visual Studio 7.0, are intended to simplify and speed up the process of building profitable Internet-based tools.

1. Application Center Server 2000 is Microsoft's answer to the problems of managing server farms and adding new servers when transactional loads require them. AppCenter allows an application — which may include hundreds of files, images and database references — to be managed as a single entity and to be replicated quickly and easily to a new server box. In addition, with AppCenter, you can administer a server farm as if it were a single machine. This is important to the success of Microsoft's strategy for scalability, which includes expansion by means of multiple commodity server boxes.

2. BizTalk Server 2000 is the XML workhorse that manages data translation and workflow routing. It's augmented by a new technology called BizTalk Orchestration. The technology uses visual programming methods to simplify the creation and management of business processes that include multiple platforms and configurations. BizTalk Orchestration is built on Microsoft's Visio diagramming software.

3. Commerce Server 2000 is a major overhaul of Site Server Commerce Edition that adds several new dimensions, including an important product-catalog module conspicuously absent from the older product. It carries forward the "pipelining" structure whereby modular processes can be strung together into a complete set of procedures that define the business rules of a commercial transaction. These pipelines can be packaged in the form of comprehensive vertical applications, which Microsoft plans to make available on the Web.

4. Host Integration Server 2000 is an upgrade to SNA Server that allows Windows applications to connect into the IBM-centric world of CICS transactions and MQSeries messaging middleware. The added features reflect Microsoft's recognition that its products have to work in mixed environments.

5. Internet Security and Acceleration Server 2000 is a remade version of Proxy Server, which does local caching of Web pages. Microsoft has added a firewall component to keep out unauthorized users or processes.

6. and **7.** SQL Server 2000 and Exchange 2000 Server are being upgraded for improved scalability and performance and optimized to take advantage of Windows 2000's Active Directory. In particular, Component Object Model (COM+) is now the native transaction-processing manager for Microsoft servers. In standardized comparative tests conducted this year by the San Jose-based Transaction Processing Performance Council, SQL Server with COM+ running on relatively low-cost Compaq Computer Corp. servers attained speeds almost double that of the second-place, but more expensive configuration of Oracle Corp.'s 8i running on either Sun Microsystems Inc.'s SPARCstations or IBM's RS/6000 servers.

Finally, Microsoft's basic development tool kit, Visual Studio, is getting a major upgrade. In particular, the new version of Visual Basic includes inheritance and is a true object-oriented language. When this was announced at Microsoft's Tech-Ed 2000, thousands of developers in the audience applauded. Another new feature in Visual Studio is a r[illegible]t application development tool specifically for servers. ▶

BRIEFS

Fishmonger to Become ASP

Business-to-business portal Fishmonger.com has announced that it's becoming an application service provider for the seafood industry as well as adding online auction and logistics capabilities.

Myfishmonger, the Kirkland, Wash.-based company's new suite of seafood business applications, will offer services such as real-time inventory management, which will let customers automatically add or delete stocks as they are bought or sold, said a Fishmonger.com spokesman.

Tandberg Unveils Tape Drives

Tandberg Data Inc. in Simi Valley, Calif., has introduced its SLR100 Library of tape drives. Features include up to 4 terabytes of capacity, 144GB per hour, 10 to 40 cartridges and up to four tape drives. Pricing is between $6,900 and $26,500.

www.tandberg.com

Fibre Channel Disk Storage Systems Introduced

Cambex Corp. introduced the Centurion 2000 FF, a full Fibre Channel disk storage system. It offers up to 25 terabytes and delivers up to 360MB/sec. sustained sequential reads. The 2000 FF runs on environments including Windows NT and 2000, Novell Inc.'s NetWare and UnixWare.

Pricing for the systems begins at 5 cents per megabyte and is based on configuration. Waltham, Mass.-based Cambex develops Fibre Channel hardware and software for storage-area networks.

www.cambex.com

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ITU Sets Stage for Next-Generation GPS, Mobile Services

BY BOB BREWIN

The U.S. walked away from the International Telecommunication Union's (ITU) monthlong World Radiocommunication Conference (WRC) in Istanbul, Turkey, "with everything we wanted and more," in terms of new frequencies for the satellite-based Global Positioning System (GPS), according to Ambassador Gail Schoettler, head of the U.S. WRC delegation.

This means the U.S. can now begin developing a new generation of GPS with a third civil frequency that will give users positioning accuracy even more precise than the 10-meter accuracy available from current satellites, according to the U.S. Department of Defense, which manages the navigation system.

Delegates from the 180 nations that belong to the ITU also approved the designation of new frequency bands for next-generation cellular service, known as International Mobile Telecommunications-2000 (IMT-2000), which could lead to the development of the wideband world phone.

Besides providing additional spectrum for GPS, the WRC also added frequencies for a Russian satellite navigation system and the new Galileo navigation system that's under development by countries in the European Union. The ITU allocated a total of 171 MHz of new spectrum for all three systems, according to Francois Rancy, head of the French ITU delegation. Primary new bandwidth for GPS downlinks is in the 1,164- to 1,188-MHz frequency range, while downlink bandwidth for Galileo runs from 1,164 to 1,215 MHz, Rancy said.

Improved Accuracy

The National Geodetic Survey (NGS) in Silver Spring, Md., operates a nationwide network of 180 GPS reference receivers. Dr. Richard Snay, manager of the Continuously Operating Reference Station at the NGS, said the third civil frequency will allow surveyors to obtain more precise measurements by eliminating errors in the GPS signal that are induced by its passage through the ionosphere.

The WRC's approval of the Galileo navigation system should eventually make it easier for users in "urban canyons" that block GPS signals to obtain a more accurate signal quickly, "because there will be more satellites in the sky," Snay said.

The new global frequency bands allocated for IMT-2000 service at the WRC conference mark a new era in the establishment of "global wireless systems," according to Yoshio Utsumi, the ITU's information technology secretary general.

Designation of the new standard global mobile bands — 806 to 960 MHz, 1,710 to 1,885 MHz and 2,500 to 2,690 MHz (2.5 GHz) — should cut costs for manufacturers and, ultimately, for users, according to conference participants.

> There is already heavy use of the 2.5-GHz band which is totally incompatible with mobile use.
>
> ANDREW KREIG, PRESIDENT, WIRELESS COMMUNICATIONS ASSOCIATION INTERNATIONAL

Michael Kennedy, corporate vice president and director of global spectrum and telecommunications policy at Motorola Inc. in Schaumburg, Ill., said designating a global set of frequencies for next-generation mobile services will allow companies like his to "develop ways of bringing low-cost, high-quality wireless Internet to the world."

Sue Brush, vice president for the Westin division of Starwood Hotels and Resorts Inc. in White Plains, N.Y., and a self-described "global corporate road warrior," said development of a cellular telephone that could be used anywhere in the world would make her "very happy. . . . [T]here's nothing worse than being out of touch."

Brush said she uses a cell phone that operates in the U.S. and Mexico, but when she travels anywhere else, she "has to hunt down a pay phone in an airport, and then you must have the right currency to use the phone."

AT A GLANCE

ITU WRC

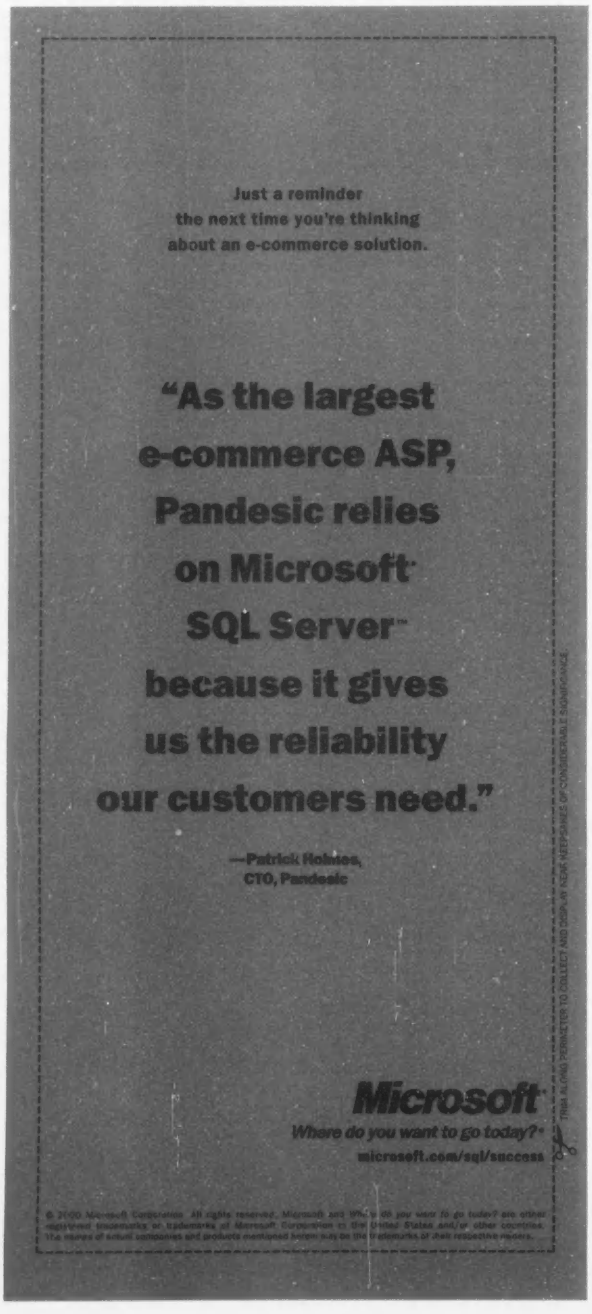
- Approved new frequencies for GPS and the EU's Galileo
- Will result in position information accurate to within 10 meters
- Approved three new worldwide mobile phone bands, which will result in the development of the go-anywhere world phone

Managing Mobile Use

The U.S. still needs to figure out how to accommodate mobile use in the 2.5-GHz band. That part of the spectrum is currently used by fixed wireless operators in the U.S., such as WorldCom Inc. and Sprint Corp., to provide "last mile" service between their long-distance networks and a customer's business or home.

"The [Federal Communications Commission] will be doing a study of sharing in that band, and the Defense Department will do a study of sharing in the 1,700-MHz band," Schoettler said.

Andrew Kreig, president of the Wireless Communications Association International in Washington, said he believes such studies will show "there is already heavy use of the 2.5-GHz band which is totally incompatible with mobile use."



DEBORAH RADCLIFF/HACK OF THE MONTH

Domain name game

IT HAPPENED over the weekend, when no one was watching: Six domain names quietly disappeared from the registry of Herndon, Va.-based Network Solutions Inc. (NSI). This is a very bad thing when you're an Internet business like Web Networks Inc., a Toronto-based Web hosting service for Canadian nonprofit organizations that had registered its domain name, Web.net, with NSI. The May 27 loss of its domain name cut it, along with the nonprofits that use its service, off from the Web for five days. It took seven days to restore ownership.

DEBORAH RADCLIFF is a *Computerworld* staff writer who specializes in security. She can be reached at deborah_radcliff@computerworld.com.

"It's been nutty. Nobody could get to our site, and we had no way of directing incoming traffic to our clients' sites," said a very tired Tonya Hancherow, Web Networks' executive director, from her Toronto office last week.

That same weekend, Naked.com, Valley.com, Web.org, Adultpass.com and Internetbanking.com also fell victim to domain name theft. Then, last week, Internet industry news provider Internet.com and GTE Internet both reported that their domain names had been stolen. All were registered with NSI.

It doesn't take a technical genius to steal a domain name when the change process is fully automated. Someone posing as the administrators of the actual sites simply filled out templates on the NSI Web site asking for an ownership change.

These administrative contacts and their e-mail addresses are conveniently provided free of charge through a "who is" lookup at any of the 40-odd accredited registrars around the world. In some cases, the perpetrator spoofed the return e-mail header to match that of the registered administrator.

In Web.net's case, the perpetrator didn't even have to spoof an e-mail header. He simply keyed the registered administrator's address into the template and, voilà, NSI's application template accepted the change of ownership, no questions asked.

At this point, the perpetrator simply transferred the hijacked domain names to another registrar, OpenSRS, managed by Toronto-based Tucows Inc.

Preventing such thefts seems simple enough. "Work it out so the only way [a domain name registrar can] accept changes is through telephone verification," says Peter Van de Gohm, director of information asset protection at Enron Energy Services in Houston.

But NSI, the official registrar of 10 million of the world's 15 million .com, .net and .org domain names, has no telephone or fax-in verification option. NSI instead offers the following three levels of authentication:

- "Mail from," which accepts all forms from the e-mail address as listed in its database or from the administrative/technical contact.
- Encrypted password, which allows updates from any e-mail address, as long as the requests are accompanied by an NSI-provided encrypted password.
- Pretty Good Privacy, which requires encryption and NSI-issued digital signatures to make updates.

Brian O'Shaughnessy, an NSI spokesman, blamed the security snafu on those using the least-secure option, "mail from." But Web.net registered under the encrypted-password security level. And, according to Hancherow, the system failed to support that level of security.

"We had an encrypted password. It wasn't used. And Network Solutions processed the change request anyway," she says.

O'Shaughnessy says the matter is "still under investigation." Perhaps it's a matter of scale. The NSI system processes 30,000 to 40,000 requests per day, which "could have" overwhelmed it, he says.

Things will likely get worse, especially if, as NSI predicts, domain name registration grows to 160 million in the next three years.

Hal Lubsen, president of Domain Bank Inc., another domain registry in Bethesda, Pa., offers this advice: "When you register, find a real registrar, not some third- or fourth-level retailer. Investigate what the rules are to make changes. Personally, I wouldn't register with someone who didn't require letterhead paper transactions." ◗

Just a reminder
the next time you're thinking
about a B2B solution.

"The world's largest B2B trading community, the Commerce One Global Trading Web, runs 100% on Microsoft® SQL Server™."

—Mark Hoffman,
Chairman and CEO,
Commerce One, Inc.

Microsoft®
Where do you want to go today?®
microsoft.com/sql/success

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Bluetooth

BY DOMINIQUE DECKMYN

IF INFORMATION appliances do outsell PCs by 2002, as market studies project, a technology called Bluetooth will come into its own. Bluetooth will connect all kinds of devices wirelessly and (its backers hope) effortlessly. At 0.1W of power and a potential cost of $5 or less per device in mass-market volume, Bluetooth is both low-priced and relatively low-priced — qualities that make it ideal for mobile appliances.

With a single, small radio chip, Bluetooth technology can replace cumbersome cable connections in all sorts of devices, from laptops to headphones to printers. It's likely to turn up in the second half of this year in some high-priced cellular phones and as an option on some laptops.

On your laptop, Bluetooth will provide a simple way to wirelessly send pages to a printer or to hook up to the Internet by connecting wirelessly with your Bluetooth-enabled cellular phone. Your cell phone itself could reside safely in your pocket as you have a conversation over a Bluetooth wireless headset such as the one recently demonstrated by Ericsson Datacom Inc. in Burlington, Mass.

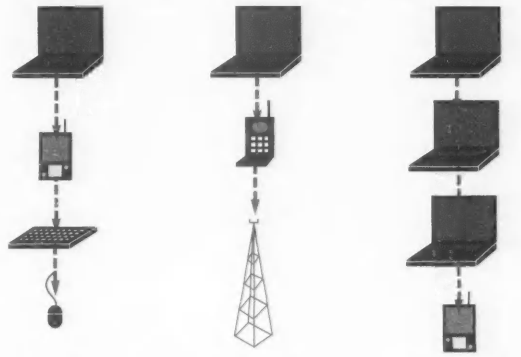
But Bluetooth can do more than just replace point-to-point cables. Its supporters say a second wave of applications will follow next year. We could see Bluetooth used to join multiple devices into an instant, ad hoc network. Some envision executives in a meeting linking their handheld computers to compare agendas or to exchange virtual business cards. A speaker's laptop could wirelessly "squirt" its slides to an LCD projector.

Another advanced use would be Internet or LAN access points — by standing near the access point, your cell phone or handheld could log on at a quite respectable speed of 721K bit/sec.

DEFINITION

Bluetooth is a low-cost, short-range radio link between laptops, mobile phones, network access points and other devices. It can replace cables and can be used to create ad hoc networks and provide a standard way to connect devices anywhere in the world.

Potential Applications



Cable replacements

Data/voice access points

Personal ad hoc networks

Bluetooth was proposed two years ago by Ericsson, IBM, Intel Corp., Nokia Corp. and Toshiba Corp., which formed the Bluetooth Special Interest Group (SIG). They have since been joined by almost 2,000 companies. The technology is named for 10th century Danish King Harald Blaatand (Blue Tooth), who unified Scandinavia. The blue logo that will identify Bluetooth-enabled devices is derived from the runes for his initials.

When the technology was first announced in May 1998, there were optimistic predictions that Bluetooth products would flood the market by late 1999. But various factors have worked against that scenario, including the hesitance of Microsoft Corp. to commit to the Bluetooth protocol. The software maker finally joined the SIG in December, opening the door to Bluetooth support in Windows and on Pocket PCs.

How It Works

Bluetooth is essentially a radio transceiver operating in a spread-spectrum mode; it changes frequency for every data packet some 1,600 times per second. This synchronized frequency-hopping, together with low power that limits range to a few feet, is what enables one Bluetooth connection to avoid interfering with another. Bluetooth is, in fact, both a hardware specification and a software framework for interoperation, each designed to be implemented on a single chip.

This technology faces some major challenges before it reaches its lofty goals. There are, as yet, no Bluetooth products in stores. Only a handful of prototypes have even been demonstrated at trade shows over the past six months.

Price is a big issue at present. There's a reason infrared ports, despite their limitations, are so widely used: They're cheap. It costs only a few dollars to add them to a system, whereas Bluetooth still costs more than $20. That's irrelevant for a $2,500 laptop, but it's a big problem for a $150 handheld.

Standards are another problem. While the first Bluetooth applications are relatively simple, more advanced applications such as ad hoc and multipoint connections require a software standard. Devices need to know how to discover one another on the network and figure out how to cooperate. Two emerging technologies — Sun Microsystems Inc.'s Jini and Microsoft's Universal Plug-n-Play — address this issue, but it's too soon to say whether either will emerge as a standard. Fortunately, experts say devices could support both at once.

Yet another problem is radio frequency interference. Bluetooth shares its part of the radio spectrum (2.45 GHz) with two other emerging standards: IEEE 802.11 — wireless Ethernet, a related but more expensive technology designed to link large numbers of PCs — and the home-networking technology HomeRF. Walk into a crowded office wearing a wireless headset, and you could potentially knock a dozen PCs off the wireless Ethernet network.

"On paper, Bluetooth and wireless Ethernet do interfere," says Peter Hortensius, director of technology development at IBM's Personal Systems group. "But the debate is about how much this actually degrades the network." He says he has used Bluetooth and wireless Ethernet at the same time and on the same system without ill effects.

The issue may be moot when the next version of wireless Ethernet, 802.11a, moves to the 5-GHz band, said Rich Nesin, manager of strategy and business development at Lucent Technologies Inc.'s Microelectronics Group in Allentown, Pa. But HomeRF backers are trying to get the Federal Communications Commission to approve higher-bandwidth, frequency-hopping devices. If that happens, says Nesin, a HomeRF network next door could seriously interfere with your Bluetooth-enabled wireless phone.

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Managing STACS and STACS of Data

Researchers use tape systems to feed massive application needs. By Mark Hall

DATA MANAGEMENT ARCHITECTURE

THE WASHINGTON state legislature has a data management problem. Its constituent hot line has topped 2 terabytes (TB) of online storage and keeps growing.

The politicians see the hotline data as critical to their future, says Kevin Hayward, a database administrator at the state capital in Olympia. "If you're not communicating with the people who have elected you, they're not going to reelect you," he says.

Hayward is confronting what's quickly becoming the most complex problem facing information technology: managing amounts of data that are growing faster than expected.

Delta Air Lines Inc. in Atlanta, for example, put more than 80TB online in less than one year. And Critical Path Software Inc. in Portland, Ore., created the same amount of information in half that time. Adding more disk storage systems with many more servers is too expensive, and using proprietary storage-area network (SAN) products could prove risky if your vendor of choice doesn't prevail in the SAN standard contest.

The storage problem is only going to get worse because of e-commerce, says Richard Winter, president of Winter Corp. in Waltham, Mass. Web shoppers' " 'clickstream' data is creating an immense amount of information," says Winter. Web sites need to collect and analyze everything — what people looked at, compared with, visited repeatedly and ordered or dropped from a shopping cart, he says.

Although e-commerce CIOs don't have many low-cost, streamlined alternatives to the data management problem today, the future looks a bit brighter because of work that's being done by researchers at Lawrence Berkeley National Laboratory's National Energy Research Scientific Computing Center (NERSC) in Berkeley, Calif. They have developed a way to use tape systems that operate as if all the tape data resides on disks.

STACS of Data

Arie Shoshani, head of the scientific data management group at NERSC, has been working for years with data-intensive applications, such as those used in high-energy physics. And he knows that moving large files from tape to disk takes time. For example, a typical ITB application running in the NERSC supercomputer center could take as long as 30 hours just to load data. When you're exploring the fundamentals of the universe, you can expect to wait a while, Shoshani says. But when some programs demand to search 300TB and beyond, waiting months for data to be searched — not even processed — is too long even when charting the moments after the Big Bang.

Adding the necessary online disk storage systems isn't practical because of the high costs. "Disk prices are coming down, but tape system costs are going down at roughly the same rate, and there is still a 10-to-1 ratio in favor of tape," Shoshani says.

That ratio helped inspire him and fellow researchers to seek solutions for efficiently managing data on tape. They created the Storage Access Coordination System (STACS) by working closely with physicists, climate modelers and scientists as they developed their data-hungry applications.

"Most systems store data in the order in which they are received," Shoshani notes. "But that may not be the best order for analyzing the data for the science involved."

In one instance, scientists captured the results of millions of particle collisions, called "events," which are created in an accelerator. When they need to analyze these events, physicists typically only want a subset of the millions of events. To search all 300TB of available data requires that they read 10,000 30GB tapes — a daunting prospect when all they want is a small subset.

That's where STACS comes in. It handles the queries the application makes of the stored data. The system minimizes the number of files and tapes that have to be read by using a specialized index of the millions of events. It optimizes retrieval by grouping queries that request the same data. It also schedules bundles of files that will need to be processed at the same time or in parallel.

> Most systems store data in the order in which they are received, but that may not be the best order for analyzing the data for the science involved.
>
> ARIE SHOSHANI, NATIONAL ENERGY RESEARCH SCIENTIFIC COMPUTING CENTER

STACS' inventors designed the specialized index to understand how data in the files — properties of "events" in the particle physics case — relate to requested queries.

By deriving advance information on all the files needed for the query, STACS can grab files before the query processing. This makes applications seem as swift as if the files were in disk cache when they were needed.

Shoshani says business-intelligence users will need something like STACS if they continue amassing data at current rates.

But it's doubtful that even the most data-rich Web site can compare in storage needs with the physics community's next big assignment: the Atlas Project, a high-energy physics accelerator that will begin producing in 2005 up to two petabytes of data per year.

Future computers may use only very large-capacity disks to handle even the largest jobs. Until then, Shoshani says, there's tape.

Large-Scale Storage Management Projects at Lawrence Berkeley Lab

Ongoing and future projects and the terabytes of data they will consume each year:

COLLABORATION	MEMBERS/ INSTITUTIONS	DATE OF FIRST DATA	EVENTS PER YEAR	TERABYTES PER YEAR
STAR	350/35	1999	10^7-10^8	300
PHENIX	350/35	1999	10^9	600
BABAR	300/30	1999	10^9	80
CLAS	200/40	1997	10^{10}	300
ATLAS	1,200/140	2004	10^9	2,000

Yesterday I was just numbers on paper.

Today I am the lifeblood of business.

I am the genetic material

that flows between companies

to create products,

deliver service,

build companies,

enhance life.

And I am forever

committed to commerce.

Who is committed to me?

We're investing 6 billion dollars in the most far-reaching deployment of broadband out there. We're one of the largest network integrators, and a provider of advanced, global eCommerce solutions. We're SBC. The combined strengths of Ameritech, Pacific Bell, Southwestern Bell, Nevada Bell, SNET and now Sterling Commerce.

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Sharper Staples

WEB SITE MAKEOVERS
AN ONGOING SERIES

The office supply superstore trims some parts of its site, bulks up others and even creates new tools to make shopping easier. Customers are even entering their ZIP codes now. By Mathew Schwartz

STAPLES INC., THE $9 BILLION OFFICE supply superstore, is constantly refining its Web site. In its most recent redesign, which launched May 7, the focus was to make it easier for customers to find products online and to help them complete their purchases quickly. To achieve those goals, the Framingham, Mass.-based company added more information to some parts of the site, simplified other parts to speed navigation and designed new tools such as a favorites list to facilitate the purchase process.

Sometimes, a little more context — or information — is all it takes to keep a customer from clicking off your site.

Last September, Staples added a ZIP-code request page to its site. The page appears the first time a customer clicks any link to a product or aisle that's off the home page.

"We were losing customers at that prompt because they thought we were collecting marketing data," says Mike Ragunas, chief technology officer at Staples.com, the retailer's online arm.

The real reason for collecting the information: Staples delivers from local distribution centers, and ZIP codes let its back-end systems determine inventory and delivery times for each customer. But the page originally didn't tell customers that. So in February, Staples launched a reworded page saying, "To view real-time inventory availability, please enter the ZIP code where products will be shipped." Just by changing the text, Staples cut the number of customers who abandoned its site at that point by 75%.

Sometimes more extensive changes are necessary to give users greater context. As the number of products that Staples carries grows, some site

tools no longer work as effectively. The search engine, in particular, was returning many inappropriate hits. A search for "Palm Pilot," for instance, returned results not only for handheld computers but also for hundreds of products such as Pilot pens. Site logs showed that users didn't always page through all the results to find what they had originally been looking for.

Given the search tool's popularity, its performance problems equaled a loss of sales. "Search is used a lot on our site," says Ragunas. "People use it as their primary means of navigation, sometimes as a secondary means of navigation," meaning users will browse the site first and then use the search tool.

"They are all coming into search at different stages of the navigation experience," says Colin Hynes, director of usability at Staples.com. So a new search tool would have to work well, regardless of when a customer fired it up.

Staples created a new search engine with improved filters (the software that translates written queries into database searches). After examining actual user queries, Staples refined the filters so they could provide more accurate responses. Now, the filters are better able to tell the difference between PalmPilot handheld computers and Pilot pens.

But filters aren't foolproof. "Of course, you hope the search engine bubbles up the exact product right up front, but we know the reality is that it won't always happen," says Hynes. To account for that, Staples designed a new way of presenting search results.

In the old system, all the results appeared in one list. In the new version, Staples developers coded several extra SQL calls, which not only return a list of products but also show the category or "aisle," in which the products can be found. Instead of navigating several hundred results, customers can see that their query for "wrist rest" has produced 34 hits in the category "Technology/Computer Accessories/Mouse Pads & Wrist Rests," and fewer hits in several other categories. Below the category results is a summary of a few products from each matched category.

Through user testing, Staples found that by adding an extra layer of context to search results — category matches as well as products — it had reduced the time users needed to find what they were looking for.

Skipping Steps

Shaving 10 or 15 seconds from the time it takes a user to complete a task by eliminating Web pages or simplifying tasks adds up to big savings, both in time for the user and in load handling for the Web server. Simplification is imperative for e-commerce sites, says Web site usability expert Jakob Nielsen, principal of the Nielsen Norman Group in Mountain View, Calif.

"Your one and only goal in e-commerce is to close one sale as fast as possible," he says. "When customers return, then you can give them one-click ordering and ask surveys to make it all more efficient."

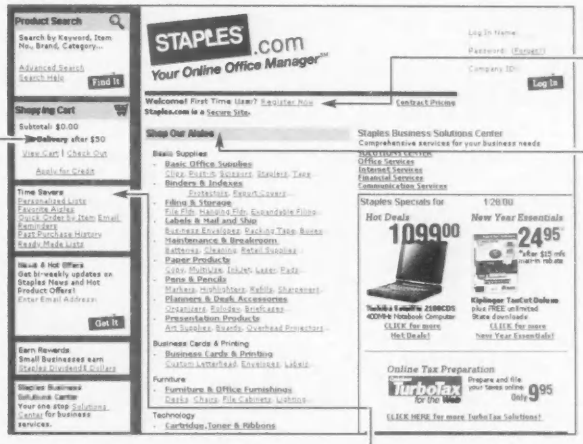
At first, such ambitious additions to a site can actually take more of customers' time. For example, before using one-click ordering, customers must understand it, agree to warnings — because the process pays for and sends an item to them — and set credit-card and shipping preferences.

To save users time, Staples launched simplified profile-creation pages in February. Previously, a user had to complete four separate pages to provide the necessary billing, shipping and preferences information. From a download and simplicity standpoint, four pages turned out to be too much. "There were

Continued on page 78

The Home Page

To hold ever-expanding amounts of products, Staples introduced tabs for the high-level navigational metaphor. It also redesigned the overall interface, bringing the features that saved users the most time onto the right side of every page in the site.



Registration optional: Customers could either log in or just begin browsing and not have to register until they wanted to purchase goods.

Before

Top-level navigation metaphor: aisles. The metaphor wasn't scaling to hold the burgeoning product list.

Shopping cart view summary reminded users how many products were in their carts, and the total dollar value. But every time users added an item, they had to find their way back from the shopping-cart page.

Time-savers: Not all time-savers made the grade for the new version. Ready Made Lists was axed. Personalized Lists became Favorite Items. Along with Favorite Aisles, it was deemed to save so much time that it was added to every page.

Top-level navigation metaphor: tabs. Seeking a simpler, more flexible "container" for growth, Staples went with just five tabs. The three product lines are holdovers from the catalog days. "Business services," aimed at small businesses, had grown large enough to merit its own section.

After

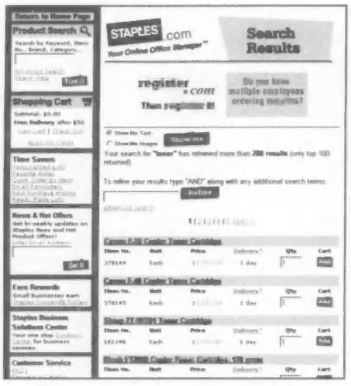
Shopping Cart, Favorite Items, and Favorite Aisles all existed before the redesign. But Staples increased their visibility by putting them on the right side of every page, to better suit its typical customer's buying pattern: adding lots of small items to baskets, and frequently buying similar items every month or two.

Users rate the new site 30% higher on the qualitative survey Staples uses. It uses a five-point Likert scale (strongly disagree to strongly agree) survey to capture customer feedback about such things as the site's user friendliness, efficiency and trustworthiness, after users perform core tasks like registering and ordering.

Before, during and after the redesign, Staples went out of its way to tell customers what the changes were and why they were made.

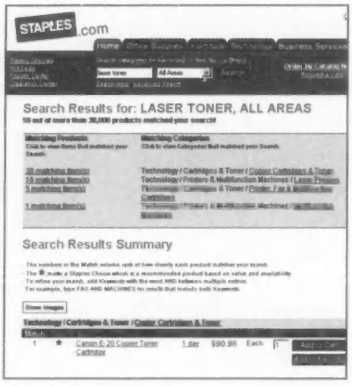
The Search Page

The Staples.com search engine was having difficulty keeping up with the increasing number of products available on the site. One query could produce hundreds of responses, and users weren't taking the time to sort through all of them. So Staples upgraded its search engine technology by moving to a newer version of Microsoft Site Server. It wrote more extensive filters to translate user queries into correct responses. And following the lead of search engines such as Yahoo, it increased the usefulness of its results page by including category matches, as well as matches for individual products.



Before

Old search results listed all matching products; users had to page through unweighted results.



New search results list not only products, but categories as well, making it easier for customers to find what they are looking for.

After

Continued from page 77

customers saying, 'I want to do business with you; help me out,' " says Hynes. By reducing the amount of information it asked for, Staples reduced the number of pages to just two. The result: The number of users leaving from that part of the site is down 20%.

In testing, users spent an inordinate amount of time adding items to their shopping carts, then trying to get back to where they had been before. Unlike Amazon.com Inc.'s Web site, where users are often reading reviews and buying single products, Staples.com users tend to buy a lot of goods at once.

So though the norm of e-commerce sites is to take users to the shopping-cart page whenever they add items to their carts — as a reminder to buy the items before they leave — Staples took the unorthodox approach of putting the shopping cart on every page. Now, instead of having to click through three or more screens to add an item to the cart and return to previous shopping aisles, customers click once and the item shows up in the shopping cart, which is visible on the right side of every page.

Paring a site also includes simplifying options. Staples had a feature called Ready-Made Lists, a standard list of purchases for different types of customers. Various lists were available, including lists of products needed for newly hired employees, or lists of products for new computer buyers. But in the quest to simplify the site, the lists "didn't make the cut," says Hynes. "People were using the feature, but not in great numbers, so we thought it wasn't as critical to keep that," says Ragunas.

Real-Life Customers

Staples often shadows customers to see how they use office products in their daily work lives. In 1998, researchers noticed how many people selected products in the paper-based catalog, then browsed the site to add them to the online shopping cart. By last July, Staples had created a screen where customers needed only to type product numbers from the catalog to add items to their online shopping cart.

Another discovery: Staples users tended to keep a list of what they needed. But they didn't keep that list on the site, even though such a feature was available. "We found that people were going to the site with a physical list in their hands. We said, 'There's got to be a better way to do this,' " says Ragunas.

So Staples took its list feature and made it more prominent by putting it on every page, right below the shopping cart. When users find an item they want, clicking a button adds it to the favorites list. Items can be transferred from the favorites list to the shopping cart with one click.

But some products are just hard to buy because there are so many options, as with recycled paper. Many customers didn't know the criteria they should look for in examining possible purchases. To help them, Staples designed a Feature Finder for its more complex product lines.

First, Staples surveyed customers to see which products they found most complex, then it asked them for the four or five most important attributes for such products. For computers, the most important attributes were processor speed, RAM, hard drive, multimedia drive and price. Now, when users browse into a more complex product line, such as desktop computers, the Feature Finder appears on the left side of the Web page. It gives customers an alternative — and potentially faster — way to find the products they're seeking, because the important variables are predefined. Customers just have to choose from among them. ◗

Migrate Loudly

Whenever eBay Inc. makes a change to its site – new color schemes, a better search engine – the complaints flood in. Users don't like change. Especially users who are new to the Web and who may have purchased their computer specifically to participate in online auctions or shopping.

Software makers can force consumers to learn a new interface or to become familiar with a new color scheme. But on the Web, confused users can easily click to a competing site.

As a result, sites such as eBay often unveil "stealth" redesigns, making multiple minute changes over time so that customers won't notice. "[EBay CEO] Meg Whitman is on the Staples.com board. She was in a meeting talking about this migration and said that as far as even changing the background of all eBay's pages from white to off-white, they did it in gradations, because even a slight change was really a shock to people, and [eBay officials] hear about it," says Colin Hynes of Staples.com.

Staples.com took that advice but opted for the opposite approach: let users know what they were getting, and why. It's akin to the old adage about how to tell a speech: Tell people what you're going to tell them, then tell it to them, then tell them what you told them. "You have to be very helpful," says Hynes. "We knew from experience that if you change the layout of a retail store, you can have a lot of upset customers. So we took a lot of precautions to make sure the transition was smooth."

Warning: Changes Coming!

Before the launch, the Staples.com home page had a link titled "The new Staples.com is coming." It took users to a page that introduced forthcoming changes and reassured people that their current account settings and preferences wouldn't be lost in the redesign.

To coincide with the redesign, Staples did many things, such as direct mail and e-mail campaigns, to alert users to the newly redesigned site. The e-mails even targeted users of specific features. "One said, 'We know you have e-mail reminders set up, and e-mail reminders will not change,' " says Hynes.

Staples also conducted informal presentations within the company itself. "As in every organization, everyone is very focused on an area of expertise. So we did a very extensive education so people can understand what the site is," says Hynes.

When the new redesign launched, the home page sported a "click here to see what's new" link. A new section of the FAQ explained all the changes and the company's reasoning behind them. The marketing department commissioned a new round of television advertisements. People could also call a toll-free number that guided them through the new features on the site.

For the most part, things have gone smoothly. "I won't say it's been 100% of people not looking for the old site, but by and large it's been enthusiastically received," says Hynes. Staples uses third-party ratings service BizRate.com to let customers rate the various aspects of the site. And results of the survey "have been incredibly enthusiastic," says Hynes. – *Mathew Schwartz*

A ham in Rye?

Trouble in Paradise?

A tuba in Yuba?

A place to moor in Othello?

A Dart in Vader?

A latte in Latta?

Socks in Argyle?

π in Humble?

A Falcon in Malta?

Hobbies in Stamps?

A beau in Arrowhead?

A plug in Basin?

A dancer in Swan Lake?

A raincoat in Flasher?

John Smith in Pocahontas?

Joy juice in Kickapoo?

A gardener in Ava?

Pastrami in Sandwich?

A position in Lotus?

How to look smart in Clever?

A vibrator in Climax?

A kazoo in Yazoo City?

A mean guitar in Bad Axe?

Cream and sugar in Coffee?

A killer app in Opp?

Size 12 pumps in Queen City?

Where to hail in Hardee?

Pizza in China?

Health and wealth in Wise?

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E-Sleuths Make Net Safe for E-Commerce

RIPTech stakes its claim in the growing market for remotely managed security

BY DAVID ESSEX

THE WIDELY publicized denial-of-service attacks on popular Web sites last winter have made companies increasingly willing to invest in sophisticated security-monitoring products — and the personnel needed to analyze the resulting reams of data.

But for small to medium-size companies, the investment isn't feasible. It's primarily this market that Alexandria, Va.-based application service provider RIPTech Inc. hopes to serve with its low-maintenance eSentry service.

"Ninety-nine percent of companies are not watching their data," says RIPTech's chief technology officer and co-founder, Tim Belcher. "It's a very laborious task. The page-down key in Unix grep is still the most common form of security analysis."

RIPTech puts its own experts at one end of a secure Internet link, ready to ply their skills and experience to analyze suspicious data generated by security "services" — typically firewalls, border routers or virtual private networks — at customer sites.

The data goes through four main eSentry modules, each of which represents a major step in the security management process.

Real-time monitoring and management collects the information, while an event-processing engine looks for signs of hackers and viruses.

An event-tracking module wades through the data to flag potential trouble spots, and a secure portal lets RIPTech analysts post alerts or take emergency action. "It's really bringing to the IT manager an enterprise understanding of what their security posture looks like," says RIPTech's co-founder and president, Amit Yoran.

But what truly differentiates RIPTech are the analytical skills of its security experts, the company claims. Among other jobs, Yoran was director of the Vulnerability Assessment and Assistance Program at the Department of Defense's Defense Information Systems Agency before co-founding RIPTech in 1998.

"We had designed and deployed what was, at the time, the world's largest intrusion-detection system," Yoran says.

The company's technical advisory board consists of internationally known security professionals, and its data analysts are also experts. "Good information security is a combination of great products and great people," Belcher says.

No News Is Good News

Although RIPTech includes Global 500 companies among its customers, its primary market is smaller companies like HealthQuick.com Inc., an online drugstore.

The Arlington, Va.-based company needed to protect against hostile attacks at both its headquarters and at a separate hosting facility but didn't have the time or budget to build an in-house fix. "We felt security was best left to security experts," says Mark DeSimone, HealthQuick.com's CTO.

DeSimone says RIPTech also serves as a security consultant, saving him the trouble of looking through security logs for signs of attack.

ESentry appears to be working smoothly, DeSimone says, and he compliments RIPTech on its responsiveness. "They helped me figure out what I need — what's good for HealthQuick," he says. "They helped us plug up the holes. That's what a good security company does."

Kurt Ziegler, CEO of eBEsure Inc. in Dallas, turned to RIPTech after getting the runaround from managed-network providers regarding the details of their firewall offerings. EBEsure relies heavily on its networked systems to provide customers with Web site traffic analysis.

Ziegler says he became concerned by the high-profile denial-of-service attacks but knew he couldn't hire several people to monitor threats. He says he likes RIPTech's emphasis on data analysis and its ability to accommodate his existing setup. "I'm happy with their responsiveness, and I'm expanding their solution internationally," Ziegler says.

RIPTech executives say the company is well positioned to take advantage of the growth in demand for managed security solutions. But managing its own growth could be a challenge, says Chief Financial Officer and Executive Vice President Elad Yoran. RIPTech must find qualified staff in order to grow.

RIPTech recently opened an office in Silicon Valley and has hired security experts from Cisco Systems Inc., Lucent Technologies Inc. and other firms. "We need to keep running faster and faster all the time," Elad Yoran says. ◗

Essex is a freelance writer in Antrim, N.H.

STAN BERCOW

RIPTECH CO-FOUNDERS Elad Yoran, Amit Yoran and Tim Belcher (from left)

RIPTech Inc.

COMPUTERWORLD emerging companies

Location: 5568 General Washington Drive, Suite A209, Alexandria, Va. 22312

Telephone: (703) 916-8886

Web: *www.riptech.com*

The technology: ESentry, remote security services

Why it's worth watching: RIPTech lets managers avoid expensive security investments by outsourcing to an expert provider.

Company officers:
- Amit Yoran, co-founder and president
- Tim Belcher, co-founder, executive vice president and chief technology officer
- Elad Yoran, executive vice president and chief financial officer

Milestones:
- July 1998: Company founded
- March 2000: ESentry released

Employees: 50; 25% to 35% growth rate

Burn money: $5 million initial angel investment; $2 million round of private financing in April. A $10 million round is under way.

Services/pricing: Typical monthly cost per customer site is $2,000 for subscriptions.

Customers: HealthQuick.Com, eBEsure

Partners: Radguard, Patriot Technologies Inc.

Red flags for IT:
- If managed network providers extend their offerings, RIPTech could face stiff competition.
- Some IT managers may find better alternatives from the big Internet service providers or existing network hardware vendors.
- Larger companies may prefer to hire security experts in-house.

[the buzz
STATE OF THE MARKET]

Small Fish, Big Pond

RIPTech is likely to face competitive threats beyond the remote security management niche it inhabits.

If large managed-network and application service providers (ASP) add more robust security to their broader offerings, a company's urge to outsource security might be more conveniently satisfied by a company such as AT&T Corp., GTE Internetworking or Qwest Communications International Inc.

On the other hand, such competitors are also potential RIPTech customers.

"The problem is, [RIPTech is] small," says Jasmine Noel, a research analyst at D. H. Brown Associates Inc. in Port Chester, N.Y. "They haven't got their message together just yet, marketing-wise."

To David Tapper, a research analyst at International Data Corp. (IDC) in Framingham, Mass., the big network vendors and Internet service providers are starting to act more like utilities – and managed security is a likely offering.

The opportunity is large: IDC expects sales of security services bundled with network services to grow from $703 million last year to $2.2 billion in 2003. RIPTech must market itself to those providers or lose the business of end-user companies, Tapper says.

Noel adds that the network behemoths aren't inclined to sell customized products, leaving room for RIPTech.

The Competitors

RIPTech has several competitors in the remote security management ASP niche:

Para-Protect Services Inc. (*www.para-protect.com*) in Alexandria, Va., is RIPTech's closest competitor, but it offers broader services such as hardware installation, integration, and testing.

The Big Five auditing firms such as PricewaterhouseCoopers and Ernst & Young International, both in New York, also play in this market. However, they offer only intrusion detection, not incident response.

Pilot Network Services Inc. (*www.pilot.net*) in Alameda, Calif., bills itself as the "security utility pioneer." It provides customers with a secure Web connection by functioning as their Internet service provider.

Salinas Group (*www.salinasgroup.com*) in New York designs, implements and provides training on firewalls, then offers various levels of outsourced monitoring and management through its ManagedFirewall.Com site.

– *David Essex*

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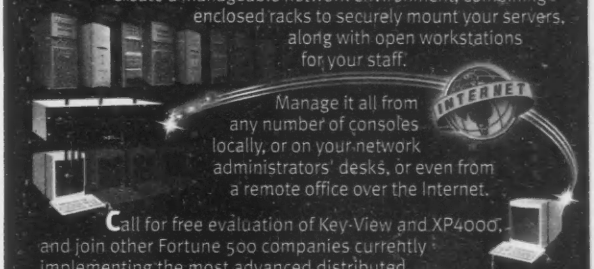

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WALTER P. CALAHAN

Quality Cops

WHO: Susan Burgess
TITLE: Quality assurance director
COMPANY: Information Technology Business Group Inc., Potomac, Md.
BACKGROUND: Director of the Quality Assurance Association of Maryland; advisory board member for the Quality Assurance Institute USA; co-author of the Testing Capability Maturity Model and the Method for Optimizing Software Testing Model
NATURE OF WORK: Ensuring that new software, hardware and upgrades perform as specified; that IT project requirements are met; and that all applicable standards are specified, met and followed. Also involves oversight for testing projects and programs, reporting project status to senior management and recommending quality improvements.

Quality assurance (QA) managers are responsible for the success or failure of mission-critical information technology systems. They prove out these systems, test them for bugs and sign off on them. If a system is life-critical — say, an air traffic control or emergency services network — one piece of buggy software could mean the difference between life and death. It's no job for the faint of heart.

BY DEBORAH RADCLIFF

Susan Burgess ends her conversations with a sappy, "Have a quality day."

But with 20 years' experience in QA, she has a right to sappiness. During that time, she's also earned a heap of accreditations and respect as an internationally recognized expert and speaker on software engineering quality for organizations like the Institute of Electrical and Electronics Engineers Inc. and the Quality Assurance Institute USA.

As the QA director at Information Technology Business Group Inc., a quality assurance and software engineering consulting firm in Potomac, Md., Burgess spends most of her time managing teams that examine software and hardware applications at key times in development cycles.

The teams look for bugs as well as security issues and faulty implementations and try to determine whether the application does what it's supposed to, from the user's perspective. Then Burgess decides whether the software or system is ready for prime time.

"I always find some problems: defects, poorly defined project requirements, applications that aren't user-friendly or that will crash under user load," Burgess explains.

Quality Peeves

Reporting such problems makes her none too popular among the project leaders. In fact, she's had some raucous screaming matches in the hallways with IT project leaders who felt Burgess was making them look bad. But she doesn't back down. The pressure to do things right outweighs the flack she takes from disgruntled project teams.

"If I approve a project and it fails, I could get sued. Liability in my job is a real issue. For example, what was the liability when the Mars Lander fell from the sky? That was caused by a software error," she says.

Quality Background

After completing her engineering degree in 1978, Burgess fell into QA when her employer, PPG Industries Inc., a Fortune 500 glass and paint manufacturer in Pittsburgh, sent her back to technical school to learn hardware and software. At that time, there were no certifications or formal QA training, so she did the next best thing: She got her MBA to learn management.

Now that the QA market has matured, she's brimming with certifications: Certified Software Test Engineer, Certified SPICE Assessor and Certified Quality Analyst, to name a few.

Key Quality Matters

Burgess says that in spite of its complexity, QA boils down to a few key points:

- Schedule: Does it meet deliverables on time?
- Cost: Is it within budget?
- Quality: How many defects per lines of code? What are the unresolved issues? And what is the risk?

In fact, risk management is now a critical component of QA, says Burgess. "Like right now, I have to make a decision by 5 p.m. about whether or not to let this grant management program for my client, a huge government agency, go out to the World Wide Web," says Burgess. "The agency has all kinds of financial and personal information in its databases, which need to be protected from the Internet."

No one understands risk management like the National Security Agency (NSA) in Fort Meade, Md., which dedicates teams to testing commercial software and new network configurations and installations for security vulnerabilities for the Department of Defense.

"Our users have heterogeneous networks composed of commercial products, and our customers want to know the most secure way to install them," says Neal Ziring, technical director for QA at the applications and architectures division of the NSA.

DID YOU KNOW

RESOURCES FOR CERTIFICATIONS:
www.qaiusa.com
Quality Assurance Institute USA
www.asq.org
American Society of Quality

FOR STANDARDS:
www.ieee.org

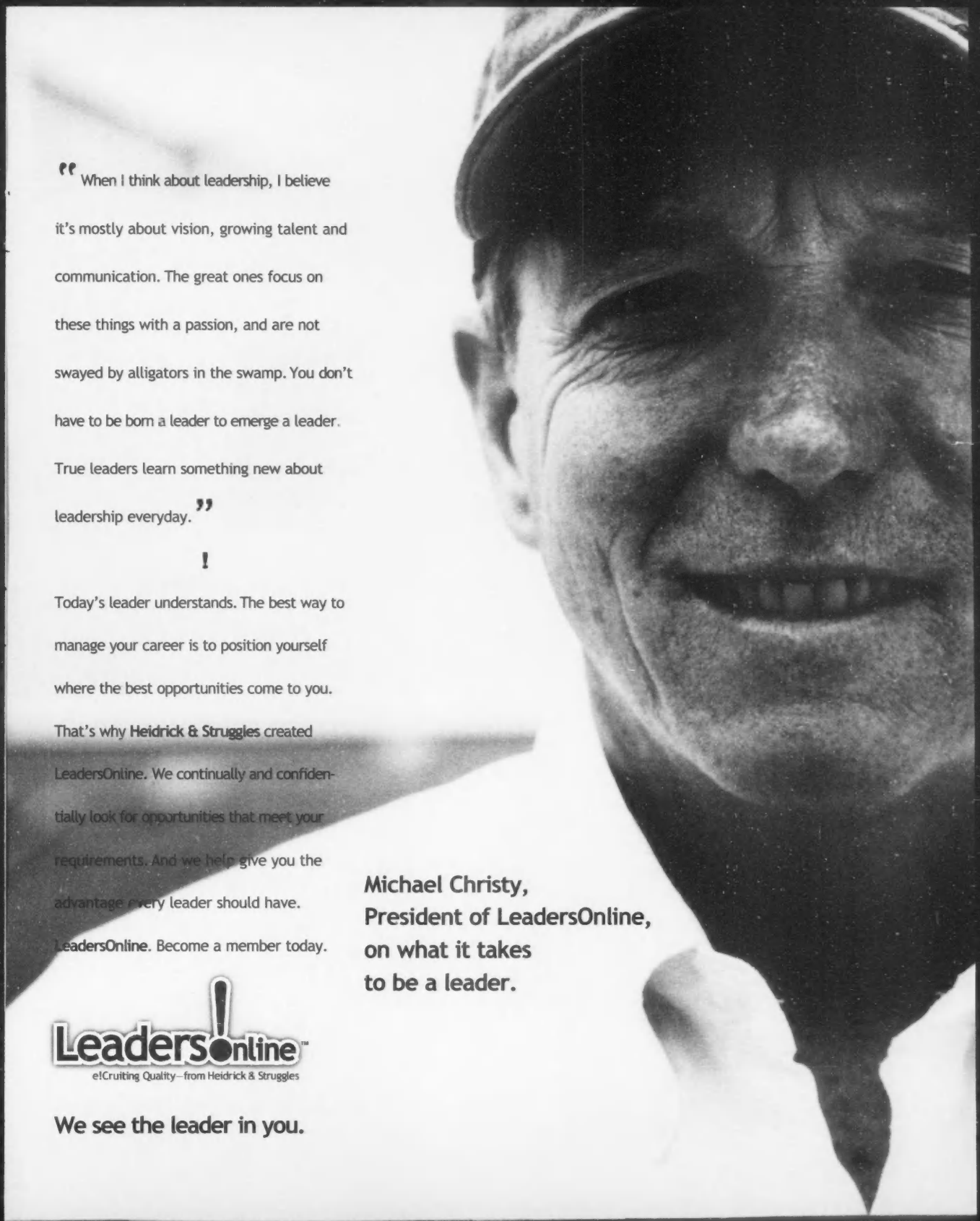
Quality Rewards

While both Burgess and Ziring say they feel the pressure of putting out quality products, they also experience the reward of making a difference. Burgess has achieved national recognition for her contributions to QA standards. And Ziring says some of his work has led to better commercial products.

Ziring describes a recommendation he recently made to solve an internal security problem involving a Web browser that incorporates hardware-based cryptography devices. "We put together the first browser/server combination that used cryptographic hardware for security," he says. "We showed this to a commercial vendor, and the CEO said he's going to put this in commercial products."

With such intangible perks, Ziring doesn't complain about his low government salary, which he declined to disclose. But if he were working in the private sector, he'd earn $75,000 to $150,000 per year, according to Burgess.

But getting there isn't easy, she says, adding, "Quality is always changing, so you have to keep up with professional development or fall behind the quality curve."


"When I think about leadership, I believe it's mostly about vision, growing talent and communication. The great ones focus on these things with a passion, and are not swayed by alligators in the swamp. You don't have to be born a leader to emerge a leader. True leaders learn something new about leadership everyday."
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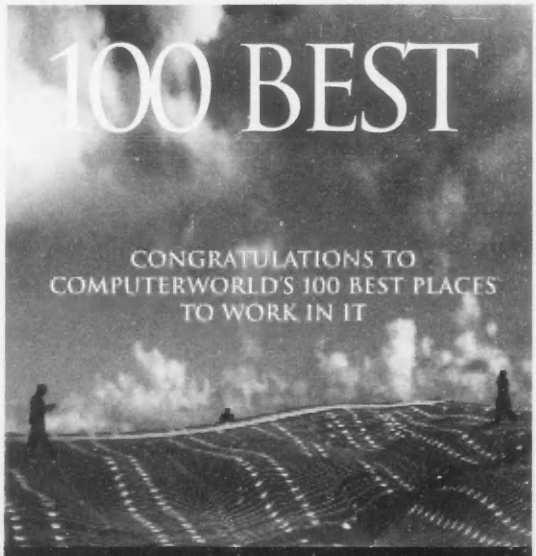

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Fax: (816) 243-3072
Website: www.kcmo.org

PROGRAMMER ANALYST

Develop various s/ware including but not limited to, entertainment, business, data warehouse, using front-end, GUI & client server s/ware tools (Visual Basic, Visual C/C++, MFC, MS-SQL Server, Oracle). Write code and test plans, perform testing, implementation & provide tech. support prep. Specifications & documentation. Some positions require knowledge of mainframe environ. May be required to use Crystal Reports, handle client feedback &/or supervise jr. prgrms. Must have Bachelor's degree in Computers, Science, Eng., Math or related field. 1+ yrs. exp. depending on position sought. 40 hr/wk (9-5). Competitive salary (commensurate w/exp.) with excellent benefits. Send resume & salary rqrm'ts to: Blockbuster Inc., Attn: Corporate Recruiter, 1201 Elm St. Dallas, TX 75270 or e-mail to: careers@blockbuster.com REF # ISSCW001

Programmer Analyst - Sought by Clinton, IA consulting company to work in various unanticipated locations throughout the U.S. Analyze, plan, develop, test, and document computer programs. Evaluate user requests and business requirements for new and modified programs. Liase with business and data processing management to formulate and define system scope and objectives through research and fact-finding to develop and modify information systems. Installation of computer systems and networks. Use LAN & WAN, UNIX, HP-UX and SCO-UNIX. Reqs. Bachelor's in Computer Science, Computer Eng., Electric or Electronic Eng., Business Administration, Commerce or its foreign equivalent. Will accept three years of college education and three years of experience in a related field in lieu of the required education and experience. $50,000/year, 40/hrs/wk, 9 AM-6PM. Respond by resume to Iowa Workforce Center, 2740 S. 17th Street, Clinton, IA 52732-7040. Refer to Job Order No. IA 1101040.

SYSTEMS CONSULTANT (Kansas City & other sites) - Provide services to clients in design and development of business systems and applications to support company activities using Unix, Windows NT, C, C++, Visual C++, Visual Basic, Oracle, Sybase, Crystal Reports, Active X & Internet Technologies. Design and develop systems for inventory control project management and Home Health & Hospice. Document system specifications, test, code & implement systems, provide enhancements, support and maintenance, prepare documentation. Masters in Comp Sc or Comp Engg or Comp Appl or Mathematics or Electrical Engg w/2 years experience in the position offered or as Systems Analyst or Programmer Analyst or Support Engineer. Masters may be equivalent degree. 40 hrs/wk, 8am-5pm, $50,000/yr. Must have proof of legal authority to work in the U.S. Pls apply in person to any local Kansas Job Service Career Center or send resume to: KS Department of Human Resources #KS2300084, Attn: Jane Burbridge, 401 SW Topeka Blvd, Topeka, KS 66603-3182

Senior Consultant/SAP Finance and Controlling Applications, for OH computer consulting services company. Based on analysis of customer's business information requirements, design, develop, implement and/or upgrade computer systems to SAP multi-module financial and controlling applications; evaluate and /or oversee system configuration, scripting, data loading and system unit and integration testing. Min req Bachelor's degree in Computer Studies/Business/Economics, or the equivalent based on a credentials evaluation, plus 2 yrs. exp. in job offered. 40 hrs/wk, M-F, 8am-5pm. $105,000.00/yr. Must be willing to travel in the U.S. 30-50 times/year. 1-2 week/trip for about 90% of work time. Send 2 resumes and cover letters (no calls) to ES SP Prgms. REF 5851D, Ohio Bureau of Employment Services, P.O. Box 1618, Columbus, OH 43216.

Programmer Analyst - Sought by Clinton, IA consulting company to work in various unanticipated locations throughout the U.S. Analyze, design, develop, code, and listing of software applications. Analyze client requirements, design and develop software applications to meet client specifications and goals. System testing and installation. Use of UNIX, Oracle RDBMS, PL/SQL, Pro*C, Designer 2000 and SQL*Loader. Reqs. Bachelor's in Computer Science, Computer Eng., Electric or Electronic Eng., or its foreign equivalent. Plus 2 years in the job offered or 2 years in a related occupation including Software Engineer or Programmer Analyst. $50,000/year, 40/hrs/wk, 9 AM-6PM. Respond by resume to Iowa Workforce Center, 2740 S. 17th Street, Clinton, IA 52732-7040. Refer to Job Order No. IA 1101039.

Commodity Trading System Analyst (for Houston, Texas location): Analyzes user's business requirements, procedures, and problems to automate commodity trading process utilizing business knowledge in commodity trading, commercial accounting, and computer knowledge in Object-C language, Object Oriented Design (OOD), InterfaceBuilder, and network systems. Architecturally designs business objects, user interface and Sybase database tables for ICTS application. Develops functional specifications for computer programmers. Reviews ICTS applications for quality assurance. Requirements: Bachelor Degree in Economics or Computer Science plus either one year experience in carrying the above duties or one year experience as a Computer System Analyst in Business, Finance, or Accounting with Knowledge of Objective-C, OOD, and Commodity Trading. CONTACT: Mr. John Rowland, President, JM Software Enterprises, Inc., 131 Woodcrest Drive, Hopewell Junction, NY 12533. (ph) (203) 327-7000, (fax) (203) 327-4100.

Database Analyst
(multiple positions) (Midlothian). Oracle database design & administration. Develop packages, procedures & functions in SQL/PLSQL. Create Shell scripts in UNIX. Evaluate interface btw hardware/ software & operational/ performance of systems.
REQD: MS or equivalent experience in job offered. Salary low 60's.
Send resumes to:
Chaparral Steel, 300 Ward Rd. Midlothian, TX 76065,
Attn: Sandy Harrison.

Software Engineer

wanted by Co dsgng & mfg battery testing systems in College Station, TX. Must have MS in Comp Sci or any Engg field & 3 yrs computer exp.

Respond to: HR Dept, Arbin Instruments, 3206 Longmire Dr., College Station, TX 77845.

Database Design Analyst

wanted by Computer Consulting, Prgmg & Training Co. in Houston, TX. Must have MS in Comp Sci or Comp Info Sys & 2 yrs database exp.

Respond to: Personnel Manager, Napier & Judd, Inc., 820 Gessner, Ste 800, Houston, TX 77024.

Software Developer for websites. Must have B.S. in Computer Science, 1 year as software developer and knowledge of C++, MIIS, ISAPI dynamic link libraries, DCOM and Visual Basic. Send resume to Dome Systems, Inc., Attn: Lance, 607 West Broadway, Suite 101, Fairfield, Iowa 52556.

Economic Research Analysts-Several senior and entry-level positions available for qualified candidates possessing Ph.D in Economics, Finance or related field with relevant experience. Work with application software such as RATS, CATS, SHAZAM, LINDO and Excel. Must be willing to travel and relocate as required. Send resume to Schwendiman Partners, LLC, 1201 "O" Street, Suite 200, Lincoln NE 68508.

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Senior/Staff Internet Network Engineer

This challenging role involves architecting, engineering and operating a scalable Internet infrastructure including several "Operations Centers" and numerous "Points-of-Presence" (POPs) spanning multiple geographies and networks. As part of the engineering design and implementation organization, the successful candidate will lead the design of networking and associated subsystems.

Requires a minimum of a BS in electrical engineering/computer science/engineering; MS or Ph.D. preferred. You must have a strong educational/hands-on background in networking protocols and experience with a major backbone provider/ISP/Web hosting company designing the network infrastructure, including Internet interfaces. Design experience with routers, Layer2/4 switches and other appliances helpful, preferably Cisco; CCIE desired. Experience with BGP, EGP, IGRP and other relevant protocols is essential, as well as hands-on experience designing/deploying WANs involving ATM and SONET technologies. Expertise with state-of-the-art networking technologies and products, including Ipv6, Gigabit Ethernet and NGI (next generation Internet) initiatives, necessary, along with the ability to assist operations with setting up "spam" filters and resolve routing issues with major carriers. Exposure to security-related challenges, including firewalls and designing DMZs (De-Militarized Zones), is a must. Preferred candidate will also demonstrate strong awareness of manageability, system management (Tivoli, OpenView, Unicenter TNG, etc.) and network management issues (SNMP, ICMP and related protocols and implementations). An understanding of issues with network programming (TCP/IP, Sockets, Winsock, etc.) and participation in industry organizations (like NANOG) also a plus.

Manager/Internet Systems and Applications

In this key role, you will develop and manage the systems administration and application organization that will support a distributed worldwide NT server infrastructure with leading-edge Internet applications. Primary responsibilities include providing reliable and efficient Internet services, including implementing and supporting system platforms, operating systems, applications and automation; monitoring platforms; as well as providing 7x24 worldwide support and second-level network support.

Requires a Bachelor's degree plus ten years of experience, a Master's degree with five years of experience or equivalent experience. We seek a motivated leader with at least five years of management experience, preferably within a technology services oriented function, including proven success managing a diverse external customer-oriented function. You must have in-depth understanding of NT, networking and the Internet. Experience managing a production client server system administration or automation support organization necessary, along with knowledge of Microsoft technologies, NT, SQL Server and Microsoft development tools. Excellent interpersonal and technical skills are key. MCSE+Internet certification preferred.

Program Manager

As part of our new team, you will manage complex projects focused on developing a world-class second generation of distributed Internet operations infrastructure and customer specific projects. Duties include documenting customer requirements; project management of a cross-functional team; and creating a process to ensure progress is communicated to customers. This role requires working closely with external customers, business partners and internal operations.

Requires a BS plus nine years of experience or equivalent. Successful candidate will demonstrate strong communication and interpersonal skills, as well as business/systems analyst competencies. An understanding of networks, operating systems, databases, data center operations and Internet technology is helpful, along with experience managing a geographically diverse staff.

Signal Acquisition Manager

As Signal Acquisition Manager, you will focus on all aspects of acquiring the signal and delivering it to the streaming network. This includes responsibility for the direct management, guidance and support of Signal Acquisition staff and consultants, as well as continuous improvement of process and standards. In addition, you will act as the technical representative after point-of-sale with customers.

At least five years of production studio/broadcasting experience necessary, with two or more years of Web development experience, preferably on Microsoft platforms with active scripts and multimedia capabilities. You must have an in-depth understanding of production studio/broadcasting operations, familiarity with commercial media editing techniques using tools such as Avid or Fast and knowledge of broadcast production technologies including Satellite acquisition, editing techniques, signal monitoring and broadcast production process. RealNetwork, Windows, QuickTime and NT experience required, as well as excellent communication, customer service and problem solving skills. The ability to prioritize issues and work autonomously with informed risk-taking practices is a must. Windows Media, RealNetwork server technology and Streaming Media experience preferred, combined with an understanding of networks, media technology, operating systems, databases, data center operations and Internet technology.

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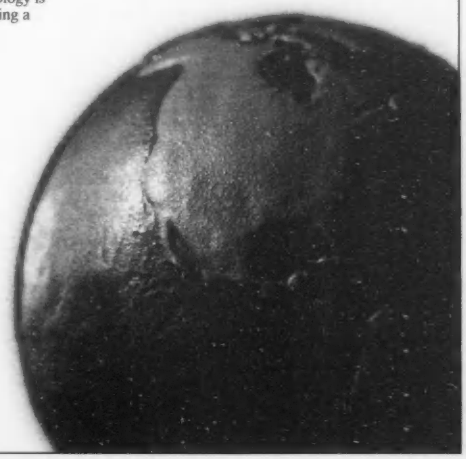
For immediate consideration, e-mail your ASCII text resume, referencing Dept. NBG-269, to:

onlinejobs@intel.com

You may also mail your letter quality resume to Intel Corporation, Professional Opportunities, Staffing Dept. NBG-269, P.O. Box 1141, Folsom, CA 95763-1141.



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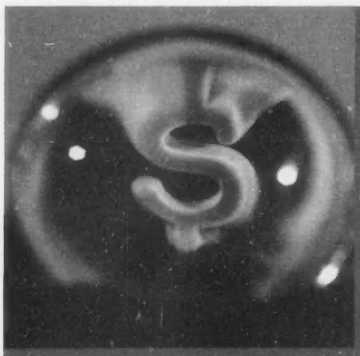

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Responsible for Customer Service Organization (CSO) services sales and post-sales technical support to the business partners and customers in Northern Latin America and South America; interface with sales, pre-sales engineers, service partners, and corporate CSO organization in Latin America; act as CSO representative for the Latin America and South America jurisdiction. Promote CSO products and services, promote contracting of service products offerings, develop forecast of CSO revenue, support service proposal and quote activities in support of sales, refine and implement service products offerings. Teach technical courses on Networking Technology protocols such as TCP/IP, LAN, WAN, X.25, Frame Relay, ATM and 802.x series for LAN, in Latin and South America. Extensive traveling in Latin and South America required. Job site and interview in Miami, Florida. 40 hrs per week, 8-5. Masters (or foreign equivalent) in EE/CS/CE plus two years of experience in the job offered or in Telecommunications/Sales. Other special requirements: 1. Routing technology, 2. Asynchronous Transfer Mode networking technology and 3. Fluency in written and spoken Spanish. Salary $82,000 per year. Send resume to Bureau of Workforce Program Support, P.O. Box 10669, Tallahassee, FL 32302, Attn: EH, JOFL2076142. EOE

DATABASE ADMINISTRATOR

Responsible for coding, testing and design, development and implementation of an Oracle-based client-server system, applying knowledge of database management system. Generate data models and install and maintain database. Provide leadership to project teams. Train junior database administrators.

Requirements: Master's Degree or equiv. in Engineering, Mathematics, Computer Science, plus 1 year experience in job offered or related occupation in database administration. Candidate's experience to include one year of Oracle database administration. Salary: $72,000/yr; M-F, 8-5. (NOTE: MULTIPLE OPENINGS). Submit copy of resume/letter of application to: Job Order # CO4660767, Colorado Department of Labor and Employment, Employment Programs, ATTN: Jim Shimada, Two Park Central, Suite 400, 1515 Arapahoe Street, Denver, CO 80202-2117. EOE. Applicants must be workers eligible to accept employment in the U.S. on a full-time basis.

SENIOR SYSTEMS ANALYST

Design and implement the Staff Management, Student Education and Group Life Programs using PowerBuilder 6.5 and Oracle 8. Develop, code, test and debug new software or enhancements to existing software, incl. gathering functional requirements, analyzing existing functionality of transfer application, documenting differences, developing estimates & establishing time-frames for software development. Manage team of junior programmers.

Requirements: Bachelor's Degree or equivalent in Engineering, Mathematics, Computer Science, plus 1 year experience in job offered or related occupation as Programmer, Systems Analyst, or Software Engineer OR three years experience as Programmer, Systems Analyst or Software Engineer. Candidate's experience to include one year develop. experience using PowerBuilder and one year develop. experience using Oracle databases. Salary $58,500/yr and up, depending on experience; M-F, 8-5. (NOTE: MULTIPLE OPENINGS). Submit copy of resume to Job Order # CO4660327, Colorado Department of Labor and Employment, Employment Programs, ATTN: Jim Shimada, Two Park Central, Suite 400, 1515 Arapahoe Street, Denver, CO 80202-2117. EOE. Applicants must be workers eligible to accept employment in the U.S. on a full-time basis.

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- Web Masters
- ERP/CRM Professionals (Siebel, SAP, BAAN)
- Client Server (Oracle, C, C++, VC++, VB)

Administrators:
- Systems Administrators (UNIX, Sun Solaris, HP-UX, AIX, Windows NT, Cisco)
- DBA's (Oracle, Sybase, SQL Server)

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Scientific-Atlanta invented much of the technology that's made cable such an important part of the converged world of new media. Our vision continues to inspire new innovations. We currently have an opportunity for an NMS Software Engineer in our Atlanta, GA headquarters.

This individual will be responsible for NMS development, including designing, documenting, implementing and testing NMS MIBs and Agents. Will also perform UNIX system administration and network troubleshooting as necessary. Requires skill with network management systems (Cabletron Spectrum or HP OpenView preferred); NMS MIBs and Agents; C and C++; TCP/IP, UDP, and RPC; and UML or OMT. We have many other software positions available. ***Please visit www.scientificatlanta.com for more information.***

Scientific-Atlanta offers a competitive salary and exceptional benefits package. **Full relocation is provided. For consideration, e-mail resume with salary history to: alan.blevins@sciati.com or fax: 770-236-3901, Attn: Alan. Job Code "AJC9TP0500" must be on all correspondence for consideration.** We are an equal opportunity employer.

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RESEARCH CHEMIST - Must have Ph.D. in Organic Chemistry, 3-year experience in job offered or 3 years experience in related job as Natural Product Chemistry or Bioorganic Chemistry Research. Research and development of new antifungal agents for crop disease management using state of the art synthetic methods (multi-step chemical synthesis), purification techniques (normal and reverse phase chromatography, HPLC and Gel-filtration separation techniques) and Chemical structure determination methods such as nuclear magnetic resonance (NMR) experiments (1H, 13C, homo- and hetero nuclear correlation techniques), infrared (IR) and mass spectrometry (MS). Rational design of new natural product analogs using mechanistic (molecular modeling) and bioorganic concepts. Use organic methodologies (organo and organometallic synthesis, photochemistry, higher-order cycoaddition methods) and bioorganic (amino acid coupling and nucleoside chemistry) to discover and develop facile chemical syntheses of complex synthetic targets. Evaluate the biological profile of synthetic analogs using various in vitro and invivo bioassays. 40 hours per week, 8:00 am to 5:00 pm. Salary $70,800 per year. Qualified applicants send resumes with Social Security numbers to Indiana Workforce Development, 10 North Senate Avenue, Indianapolis, IN 46204-2277, Attention: DPG. ID # 8675702.

Software Engineer: Provide services to clients in analysis, design & development of commercial client/server, object-oriented, multi-user, workgroup-process Special Assemblies and Contract Service Arrangement applications on PowerBuilder, PowerGen, SAMS, HiTest C, Sybase SQLAnywhere, & Sybase CTLib connectivity through WINSOCK Windows, open TCP/IP Interface and connect directly to internet or dial using ISDN and SAMSMAIL to poll database for messages & deliver same to a host Lotus Notes Mail Server for translocation. Use Corner Stone & PFC Object Cycle functions to communicate between mail applications and administer HTML utilities to facilitate communication. $ 62,000; 40 hrs./wk., 8:00 A.M. to 5:00 P.M., M-F. BS or equiv. in Comp. Science, or Comp. Engg. & 2 years exp. in job offered or related field or 2 years related exp. as a Systems Engineer or Systems Analyst Exp. In related occupations must include demonstrated ability to use skills in job description. May work at unanticipated locations in the Atlanta, GA vicinity. Send resume or apply to: North Metro, Job Order # GA 6509888, 2943 N. Druid Hills Rd., Atlanta, GA 30329 or the nearest Department of Labor Field Services Office.

Programmer/Analyst, Bedford, NH 1) Installing, configuring, & maintaining DB-2 & mainframe servers using MVS, COBOL/CICS, 4GLs, KBMS, AION, map builder, & SDF to write on-line jobs, writing batch programs and the JCL; 2) accessing data on both VSAM files and DB-2 tables; 3) Writing progression and regression plans using EXCEL; 4) data modeling of test bed and input files using File-Aid and SPUFI, ProEdit, and CIMS; 5) Verifying of test conditions & measuring results; 6) identifying faults, monitoring and re testing program; 7) monitoring computer systems time against project; 8) writing ad hoc batch DB2 programs to identify & fix data being merged from two systems into a single system & writing the JCL; 9) Migrating databases; 10) conducting design, functional, & technical analysis of systems specifications; 11) testing plans, & outline designs for programs, maps, and files; 12) testing system and making necessary code/map changes using CICS; 13) testing DB2 access paths using DB2 Explain, monitoring & performance of DB2 jobs using Omegamon; 14) overseeing installation of system, performance monitoring, training users, & providing technical support; and 15) recreating operating problems using computer aided software tools.

Salary: $65,000 Per Year
Send TWO (2) copies of resume/letters to Job Order # 2000-174, P.O. Box 989, Concord, NH 03302-0989

SOFTWARE ENGINEER to design, develop, test, implement, and maintain application software in a client/server environment for the telecommunication industry using C, C++, Visual Basic, Power Builder, Informix, Sockets and Dialogic Cards under Windows and SCO UNIX operating systems. Require: M.S. degree in Computer Science, or a closely related field, with 2 years experience in the job offered; Extensive travel on assignments to various client sites within the U.S. is required. Salary: $66,000 per year, 8:00 am to 5:00 pm, M-F. Apply by resume to: Sara Andrews, Human Resources, Noble Systems Corp., 4151 Ashford Dunwoody Rd., Suite 550, Atlanta, GA 30319; Attn: Job QZ.

IT careers.com

Sr. Software Engineer. Conduct feasibility studies and cost/benefit analysis; design, develop, & test database procedures and software packages for applications using PL/SQL on Oracle 8.0 (windows NT) with Unix operating system. Generate DDL queries inside the PL/SWL procedure. Install software, configure & test Open DataBase Connectivity application programming interface connections; prepare project plans & schedules; perform system level tests; design, develop, & implement complex enhancements to the existing systems using C++ & prepare & coordinate user documentation. Use DBT Migration Workbench and other application development tools to migrate mainframe COBOL systems to the Client/Server Architecture. Prepare & deliver management reports using Microsoft EXCEL and WORD. M.S. in Computer Science (or equivalent foreign degree) with no experience necessary or B.S. in Computer Science plus 5 years direct experience or 5 years experience in related occupation as Systems Analyst or Programmer or Software Engineer. $70,000.00 per year, 40 hrs/wk, at n/a, M-F, 8:00am-5:00pm. Please send resume to Alan Milkoff at P.O. Box 8968, Boston, MA 02114. Please make reference to case #19990914 when submitting your resume.

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Interested candidates, please mail/fax/e-mail your resume to: H.R. (CW06), FORTE SYSTEMS, INC., 3250 W. Big Beaver, Suite 544, Troy, MI 48084
Fax: (248) 649-1295
Email: recruitment@forte-inc.com.

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Software Engineer - Ballwin, MO to Research new and emerging technologies in systems solutions and software engineering. Plan, prototype and mathematically test software design using Case Tool: Cool Gen. Design, develop and implement software solutions for Enterprise Resource Planning in manufacturing, engineering and work flow management using DB2, Oracle and VC++. Other responsibilities as assigned. 40 hrs/wk, M-F, 8.00 am - 5.00 pm. $64,750/yr. Require M.S. or equiv. degree in Computer Science, Engineering, Maths or equiv. and 1 years exp. in the job offered or 1 years exp. as a Programmer Analyst, System Analyst, Systems Executive or equiv. Experience must comprise commercial software development using CoolGen, DB2, Oracle and VC++. Relocation possible. Submit resumes to Mrs. J. Gaston, Division of Workforce Development, 4040 Seven Hills Drive, Suite 166, Florissant, MO 63033. Job Order Number 224571.

Software Engineer - Design, analyze, develop, test, implement and maintain client/server projects on UNIX, WINDOWS NT and Intranet/Internet platforms using RDBMS/OOAD. Database design and analysis using Designer/2000. Server side development using SQL*Plus, PL/SQL Stored Packages, Procedures and Triggers, C, C++ and Pro*C, SQL Scripts, optimized queries on Oracle 7 server. Front-end development using Developer/2000-Oracle Forms 3.x/4.x, Oracle reports, Java, Javascript and HTML. Proficiency in COBOL, Forms 3.0 for conversion projects. Test applications using test tools like MS-Test/SQA Team Test. Maintain Oracle server as junior DBA. Req. MS or foreign equivalent in computer science or related discipline plus 1 yr. exp. in the job offered. Sal. $65K/yr. Work 40 hrs/wk. Resume to : Cobb/Cherokee, Job Order # GA6516562, 456 Big Shanty Rd., Marietta, GA 30066-3303, or the nearest Department of Labor Field Service Office.

e programmers wanted Impetus Computing Systems, Inc. wants Junior programmers, Programmer /Analysts, Technical leads and Project Managers in a consulting environment with expertise in Java, C++, XML, EJB, CORBA, OOAD, and related skills. Send resumes to ritu@impetus.com or fax to 408 473 0791.

Nexgenix, a leading supplier of innovative, end-to-end e-Business consulting services, is seeking technical architects, developers, designers, analysts, project managers and strategists. Qualified candidates must possess a minimum of a Bachelor's or Master's degree and/or comparable experience. Opportunities are available at all of our locations, including California, Georgia, New York, New Jersey, North Carolina and Florida. For information please visit our web site at www.nexgenix.com or send resume to careers @nexgenix.com.

IT professionals with a min. of 2 yrs enterprise resource planning experience in either (A) or (B) needed. (A): Movex, Accell, APLUS, JDE & Client Access/400; (B) SQL/400, AS/SET, LANSA, BPCS, JBA, APLUS. Travel reqd. Please send resume & salary reqmnts. to HR, Ahuja Technologies, Inc., 12005 Ford Road, Suite 585, Dallas, TX 75234

Process Analyst/Quality Assurance Analyst will write, revise and verify quality standards & test procedures for program design and product evaluation; formulate & design systems scope & objectives; prepare detailed specifications encompassing all phases of the full software development life cycle; will devise improvements to current procedures & develop models of possible configuration plan & perform system and integration testing; assist in User Acceptance testing (UAT); maintain and store controlled versions of identified software; collect , maintain and retain quality assurance records; conduct reviews and audits related to process and product quality. Perform work flow analysis & recommend quality improvements. Assist in integrating CTI technology like predictive dialing systems TSAPI & TAPI into application development in a telemarketing enviroment. 40 hour week, 9AM-5PM, $68,000 per year. B.S/Foreign degree equivalent in Business Administration in Management. 1 year exp. in job offered or 1 yr. exp. as a Quality Assurance Analyst. Submit resume to: Dept. of Labor/Bureau of Workforce Program Support, P.O. Box 10869, Tallahassee, FL 32302, RE JOFL#2081202

GROUP INFO MGT. MANAGER (SAP)

POLAROID CORPORATION, a global leader in instant imaging research, technology and products, has a need to fill a ***Group Information Management Manager (SAP)*** position. This Boston-area position will be responsible for leading the design and implementation of global business processes and SAP integrated software.

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NYSE Participates in Global Trading Talks

But it may be too late to compete with Nasdaq

BY MARIA TROMBLY

THE NEW YORK Stock Exchange (NYSE) is negotiating with nine other stock exchanges to form a global equity market.

The other exchanges include the Australian and Tokyo stock exchanges, as well as exchanges in Paris, Hong Kong and São Paolo, Brazil. The market capitalization of the companies listed on the exchanges exceeds $20 trillion, roughly half of which is represented by NYSE-listed domestic companies.

INDUSTRY ALMANAC

"The agreement that we are formulating will strengthen and globalize our markets throughout the Americas and among time zones," says Richard Grasso, NYSE chairman and CEO, in a statement issued last Wednesday.

The NYSE announcement comes on the heels of several recent moves by New York-based competitor Nasdaq Stock Market Inc. to expand overseas. Last month, Nasdaq announced a joint venture with a newly formed company called iX that was created by the London Stock Exchange Ltd. and Frankfurt-based Deutsche Börse AG. The venture will be called Nasdaq iX.

In addition, Nasdaq Japan is set to open a joint venture with the Osaka Securities Exchange on June 19.

The NYSE might be arriving too late to global trading, says Larry Tabb, an analyst at TowerGroup in Needham, Mass. "Nasdaq has already sewn up relationships with people in Europe" and Japan, he says. An NYSE spokesman declined to comment.

Tabb says Nasdaq's deal with the Frankfurt and London exchanges is a major coup. "They are the premier exchanges" in Europe, he says. "And to the extent that [NYSE is] locked out of that partnership, that's a significant issue."

However, analysts say, the global trading system isn't yet set in stone.

"We don't know what form the markets will take," says Dana Stiffler, an analyst at Newton, Mass.-based Meridien Research Inc. "Will they incorporate traditional Nasdaq or NYSE market types into the global platform, or will there be some combination, or will it be electronic?"

Market Strength

NYSE PARTNERS:

- **NYSE:** $11.2 trillion
- **Tokyo:** $4.5 trillion
- **Paris:** $1.5 trillion
- **Toronto:** $887 billion
- **Amsterdam:** 681 billion
- **Hong Kong:** $651 billion
- **Australia:** $405 billion
- **São Paulo:** $245 billion
- **Mexico:** $161 billion
- **Brussels:** $159 billion

Total: more than $20 trillion

NASDAQ PARTNERS:

- **Nasdaq:** $6.2 trillion
- **Osaka:** $3.0 trillion
- **London:** $2.8 trillion
- **Frankfurt:** $1.5 trillion
- **Hong Kong:** $651 billion

Total: more than $10 trillion

As of March 2000

SOURCE: INTERNATIONAL FEDERATION OF STOCK EXCHANGES, PARIS

EXCH	52-WEEK HI	52-WEEK LO	NAME	JUNE 9 2 PM	WK NET CHANGE	WK PCT CHANGE
SOFTWARE UP 0.9%						
ASWX	149.12	11.00	Active Software	70.00	24.25	53.0
ADBE	132.00	32.50	Adobe Systems Inc. (H)	120.13	-4.00	-3.2
ARBA	180.34	18.25	Ariba Inc.	78.75	10.81	15.9
AZPN	55.37	8.12	Aspen Technology Inc.	23.75	-2.06	-8.0
ADSK	56.06	17.00	Autodesk Inc.	37.00	-4.00	-9.8
AVID	25.56	9.43	Avid Technology	10.00	-0.25	-2.4
BAANF	17.81	1.12	Baan Co. N.V.	2.63	-0.06	-2.4
BMCS	89.87	16.00	BMC Software Inc.	43.94	-2.41	-5.2
BOBJ	150.87	14.50	Businesss Objects S.A	92.75	-1.50	-1.6
CDN	24.62	9.16	Cadence Design Systems	18.88	0.00	0.0
CHKP	295.00	21.34	Checkpoint Software Tech Ltd	229.00	6.38	2.9
CTXS	122.31	21.81	Citrix Systems Inc.	41.81	-16.06	-27.8
CGEN	41.62	9.88	Cognex Inc. (H)	39.81	0.25	0.6
CA	79.43	42.31	Computer Associates int'l Inc	58.63	1.38	2.4
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INFA	110.87	10.68	Informatica Corp.	52.00	2.31	4.6
IFMX	21.25	8.18	Informix Software Inc.	9.16	-0.56	-5.5
INTU	90.00	22.50	Intuit	38.94	1.38	3.4
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BCE	137.50	21.06	BCE Inc.	25.75	2.06	8.7
BEL	69.50	42.37	Bell Atlantic	54.19	0.56	1.0
BLS	53.50	30.87	Bell South	47.19	-1.31	-2.7
BRW	41.06	16.31	Cincinnati Bell Inc.	27.63	4.19	15.6
CMCSK	57.68	27.87	Comcast	38.63	2.69	6.8
CQ	37.06	15.37	Comsat Corp.	24.75	0.81	3.2
COX	58.37	33.37	Cox Communications Inc.	46.00	0.69	1.5
GTRK	53.75	7.87	Globetrotter Telecom. Ltd.	7.97	-1.16	-12.7
GTE	79.50	55.81	GTE Corp.	65.19	1.25	2.0
NXTL	82.93	17.93	Nextel Communications (L)	56.25	6.69	13.5
SPRT	74.25	29.37	Prizmatel	48.75	2.25	4.8
QCOM	205.00	22.62	Qualcomm	79.38	10.13	14.6
SBC	59.87	34.81	SBC Communications	47.44	2.75	6.1
FON	75.43	42.62	Sprint Corp.	65.56	3.56	5.7
TDS	137.00	65.50	Telephone and Data Systems	110.75	1.38	1.2
UCM	81.50	51.75	US West	80.06	5.50	7.4
VIA	66.19	36.68	Viacom (H)	58.13	1.75	3.1
WCII	66.50	24.00	Winstar Communications Inc.	34.19	0.56	1.7
WCOM	64.51	35.87	MCI Worldcom Inc.	42.00	1.75	4.3
SERVICES OFF -2.4%						
ACAM	35.93	14.56	Acxiom Corp.	30.50	-0.69	-2.2
AGIS	52.00	31.00	Affiliated Computer Servs.	33.50	-1.63	-4.6
AMSY	64.37	13.75	American Mgt. Systems	36.69	-1.38	-3.6
AUD	57.93	37.37	Automatic Data Processing (H)	56.31	0.56	1.0
BSYS	69.00	41.37	Bisys Group Inc.	63.88	1.25	2.0
CATP	27.00	6.75	Cambridge Technology Partn.	7.56	-0.88	-10.4
CEN	35.25	18.75	Ceridian	24.38	0.31	1.3
CBR	29.87	13.75	Ciber Inc.	17.00	-0.56	-3.2
CDO	57.25	17.43	Comdisco	27.38	-2.00	-6.8
CHRZ	27.12	10.37	Computer Horizons Corp.	11.19	0.75	6.3
CSC	94.87	57.93	Computer Sciences	69.94	-1.25	-1.8
DST	93.56	51.18	Dst Systems Inc. (H)	81.13	1.44	1.8
EDS	76.68	40.31	Electronic Data Systems	43.31	-21.25	-32.9
FDC	57.68	38.93	First Data Group (H)	54.93	0.44	0.8
FISV	48.87	24.12	Fiserv (H)	47.88	0.06	0.1
IT	73.37	9.56	Gartner Group	13.13	0.44	3.3
KEA	35.00	16.06	Keane	27.38	0.38	1.4
NDC	57.06	20.93	National Data (L)	20.94	1.31	5.9
PAYX	40.50	15.70	Paychex Inc. (H)	36.13	0.06	1.5
PER	29.56	14.37	Perot Systems Corp. (L)	14.69	-0.75	-4.9
REGI	5.75	1.75	Renaissance Worldwide	2.38	0.13	5.6
REY	33.06	17.75	Reynolds & Reynolds	20.44	1.56	7.1
SFE	90.00	15.85	Safeguard Scientifics	41.50	4.69	12.7
SAPE	151.18	23.62	Sagent Corp.	106.94	-10.56	-9.0
SMS	72.93	25.50	Shared Medical Systems	69.50	3.25	4.5
SDS	40.00	16.87	Sungard Data Systems	33.06	1.56	4.5
SYNT	20.93	7.87	Syntel Inc.	11.63	0.31	2.6
TECD	44.68	16.00	Tech Data	41.94	2.25	5.7
TENF	76.12	35.25	Tenfold Corp.	20.38	-6.06	-22.7
TSS	29.62	14.12	Total System Services Inc	19.56	-0.50	-2.5
TSAI	48.12	11.37	Transaction Sys. Architects	17.63	3.38	23.7
NETWORK UP 4.0%						
COMS	119.75	22.62	3Com Corp.	50.56	3.94	8.4
ADCT	76.87	17.18	ADC Telecomm Inc. (H)	75.81	1.31	1.8
ANTC	61.25	23.25	Antec	51.75	-1.56	-2.9
BNTN	80.56	6.25	Banyan Systems Inc.	9.13	0.00	0.0
CS	52.25	11.12	Cabletron Systems	32.44	-0.44	-1.9
CNEBF	7.06	2.62	Call-Net Enterprises	2.88	0.25	9.5
CSCO	82.00	26.37	Cisco Systems Inc.	64.19	0.19	0.3
EGIL	39.43	23.75	EG Telecom	31.50	2.38	8.2
ENTU	150.00	16.87	Entrust Technologies Inc.	62.38	6.25	11.1
HRS	39.93	15.50	Harris Corp.	31.63	-1.25	-3.8
GMH	140.00	48.75	Hughes Electronics/GM	100.00	-7.75	-7.2
ERICY	26.31	6.70	LM Ericsson	22.44	0.00	0.0
JNPR	312.93	11.33	Juniper Networks Inc.	230.06	22.75	11.0
LU	84.18	49.81	Lucent Technologies	58.31	-4.25	-6.8
MADGF	17.37	1.43	Madge Networks	5.63	0.81	16.9
NCDI	9.62	1.31	Network Computing Dev	2.41	0.72	42.6
NWK	14.81	7.31	Network Equipment Tech	10.00	0.38	3.6
NN	43.62	14.00	Newbridge Networks	35.50	0.00	0.0
NOK	69.00	17.68	Nokia Corp.	57.63	0.25	0.4
NT	72.08	17.93	Northern Telecom Ltd.	58.88	0.94	1.6
PAIR	32.75	8.00	Paragon Technologies Inc. (H)	32.19	0.56	1.8
PCTL	15.21	2.75	Picturetel	3.44	0.19	5.8
SFA	72.00	15.94	Scientific Atlanta	66.25	3.13	5.0
TLAB	77.25	41.81	Tellabs Inc.	67.31	2.06	3.2
USW	81.50	51.75	US West	80.06	5.50	7.4
VRLK	22.00	1.81	Verilink	9.00	0.88	10.8
WSTL	40.75	8.12	Wendel Technology Inc.	18.44	1.25	6.3
SEMICONDUCTORS, CHIPS & EQUIPMENT UP 0.0%						
ADPT	83.56	15.43	Adaptec Inc.	19.13	-2.00	-9.5
AMD	97.00	15.62	Advanced Micro Devices (H)	88.87	0.63	-0.7
ALTR	109.37	31.50	Altera (H)	105.63	9.69	10.1
ADI	98.25	19.15	Analog Devices (H)	94.50	1.50	8.6
AMAT	115.00	26.75	Applied Materials	94.34	1.66	1.8
ASML	56.25	14.50	ASM Lithography Holding	52.38	0.13	0.3
FCS	49.50	19.50	Fairchild Semiconductor Corp.	47.75	-1.56	-3.4
HRS	39.93	15.50	Harris Corp.	31.63	1.25	3.8
INTC	145.37	53.12	Intel Corp.	125.63	7.25	5.5
KLAC	97.75	21.18	Kla Instruments	58.50	1.63	2.7
LLTC	62.00	21.81	Linear Technology (H)	54.25	1.91	3.6
LSI	90.37	18.56	LSI Logic	61.25	0.12	0.2
MVIM	74.50	25.43	Maxim Integrated Products	68.19	1.89	2.4
MU	82.50	19.00	Micron Technology (H)	80.69	2.13	2.7
MOT	61.68	36.25	Motorola	54.25	2.38	4.6
NSM	85.93	17.68	National Semiconductor	65.63	1.12	1.7
STM	73.62	18.68	SGS Thomson Microelectronics	67.75	0.44	0.6
SUNW	49.50	24.12	Sunmicron Corp.	35.25	3.25	8.4
TER	115.43	25.78	Teradyne	90.94	7.06	7.1
TXN	191.75	75.25	Texas Instruments	92.56	1.11	1.2
JDSU	153.42	16.23	Uniphase	110.75	7.00	1.6
VTSS	115.88	26.87	Vitesse Semiconductor Corp.	72.38	7.94	12.3
XLNX	90.18	20.28	Xilinx (H)	87.88	1.50	1.7
COMPUTER SYSTEMS UP 6.0%						
AAPL	150.37	42.06	Apple Computer Inc.	95.13	4.13	4.5
ASPX	19.00	3.87	Auspex Systems	6.88	1.44	26.4
BEOS	29.56	3.29	Be Inc.	6.28	1.53	30.8
CPQ	34.00	18.25	Compaq	26.13	0.63	2.5
DELL	59.68	31.37	Dell Computer Corp.	54.38	0.56	1.3
GTW	64.00	28.37	Gateway 2000 Inc.	56.00	1.38	2.9
HWP	108.50	67.00	Hewlett-Packard Co.	104.13	0.69	0.7
HIT	164.50	74.50	Hitachi Ltd.	126.06	2.88	2.3
IBM	139.18	89.00	IBM	120.13	11.00	10.1
MOBI	35.68	8.18	Momenta	9.88	0.06	0.6
MOT	61.68	36.25	Motorola	54.25	2.38	4.6
NATI	53.50	24.75	National Instruments Corp.	41.00	2.00	5.1
NCR	52.62	26.68	NCR	41.88	3.63	9.7
NIPNY	139.93	53.62	NEC	136.00	2.50	1.9
PKCM	29.75	8.37	Procom Technic	27.13	2.88	11.9
SGI	18.87	5.56	Silicon Graphics Inc.	8.69	1.31	17.8
SNE	167.37	44.87	Sony	102.56	2.87	2.9
SUNW	108.75	26.86	Sun Microsystems	49.19	2.63	5.6
TMCO	29.75	0.25	United Systems	13.88	2.06	16.8
UIS	19.68	10.50	Unisys	14.75	1.06	7.7
INTERNET UP 6.2%						
AMZN	113.00	40.43	Amazon.com	50.50	4.19	9.1
AOL	91.87	34.68	America Online	54.56	1.25	2.3
AFNM	84.12	15.87	Afname Corp.	21.13	0.37	1.8
CHFR	125.62	23.12	Chinadotcom	33.63	4.88	9.3
CYCH	16.00	4.25	Cybermedia Inc.	8.84	2.78	31.4
EBAY	177.50	35.14	eBay Inc.	72.00	1.06	1.5
ETKS	46.06	4.50	eToys Inc.	8.50	0.38	4.7
EDNF	44.00	13.12	E-Trade Group Inc.	18.00	0.06	0.3
LCOS	93.62	28.56	Liquid Audio Inc.	65.50	2.56	4.1
OMKT	85.62	9.12	Open Market Inc.	19.56	4.50	29.9
OTEX	60.62	9.50	Open Text Corp.	26.63	0.44	1.7
PCLN	119.43	33.06	Priceline.com Inc.	84.88	5.63	7.1
PRSV	25.43	8.25	Prodigy Communications	10.75	0.00	0.0
PCLK	40.93	19.31	PSINet Inc.	37.13	1.94	5.5
RSAS	93.06	15.87	Security Dynamics	63.00	1.63	2.6
SPGS	35.25	9.69	Sapient Corp.	31.63	3.25	8.5
WIMS	75.00	6.00	Wink Communications Inc.	27.88	2.27	10.8
YHOO	350.06	55.00	Yahoo Inc.	142.38	14.41	11.2
STORAGE & PERIPHERALS UP 0.5%						
ADPT	83.56	15.43	Adaptec Inc.	19.13	-2.00	-9.5
APCC	85.00	16.12	American Power Conversion	39.13	2.88	7.9
CANNY	69.37	24.25	Canon Inc.	44.88	2.38	6.0
DEC	30.87	19.68	Diebold Inc. (H)	30.81	0.75	2.5
EK	78.28	52.75	Eastman Kodak Co.	59.38	1.94	3.2
EMC	107.00	22.87	EMC Corp.	68.94	0.81	1.2
IOM	6.37	2.87	Iomega	3.75	0.19	5.3
MXTR	14.81	4.25	Maxtor Corp.	11.31	0.06	0.6
NTAP	174.00	9.84	Network Appliance Inc.	66.74	11.56	19.9
LXK	115.87	59.81	Lexmark International Group Inc.	72.00	6.38	9.4
SEG	75.87	25.12	Seagate Technology	54.25	0.56	1.0
STK	27.18	10.62	Storage Technology	12.06	0.13	1.0
TEK	71.75	22.12	Tektronix	59.12	3.75	6.7
XRX	62.12	19.00	Xerox	25.81	1.94	7.8

KEY: **(H)** = New annual high reached in period
(L) = New annual low reached in period

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IBM Strategy

the final specification, meaning they won't work together.

EJBs are reusable software components meant to speed application development by providing key functions, such as currency conversion, that can easily be added to applications and run across multiple platforms.

Tom Guyette, a senior systems analyst at the Federal Reserve Bank of Minneapolis, lauded IBM's initiative; EJBs are used extensively throughout the government's 12 Federal Reserve banks. However, he said that to be useful, such components would have to run on both the bank's IBM WebSphere Web servers and its WebLogic application servers from San Jose-based BEA Systems Inc.

WHAT IT MEANS

Market research firm **Gartner Group** *in Stamford, Conn., expects the market for prebuilt components to more than* **quadruple to $8 billion** *by 2002 from $1.4 billion in 1997.*

IBM doesn't license Sun's Java 2 Enterprise Edition (J2EE) brand but says it conforms with the application programming interfaces.

IBM's approach perplexes some users. In fact, for Juan Cardenas, an application architect at GTE Corp. in Dallas, the strategy may be backfiring. "We want IBM to offer full support for Java J2EE. But for some reason, they're not backing it. And that's not good."

But at least now, some components — whether from IBM or other vendors — might not fulfill Java's "run anywhere" promise. Because the EJB specification, which is part of J2EE, still needs to be further defined, vendors may come up with slightly different component implementations. Sun program manager Bill Roth said the upcoming EJB 2.0 specification will address this issue.

"At the moment, Enterprise JavaBeans just aren't portable enough," said Jillian Morrison, a senior software engineer at Instinet Global Services Ltd., a London-based brokerage firm owned by Reuters Group PLC. "I think they're going to be vendor-specific at the moment. EJBs are still new, and we're learning where the holes are."

IBM's vice president of Java, Rod Smith, would say only that the components would "technically work with open-standard" application servers.

IBM's attempt to steal the Java limelight caught Sun executives by surprise. Patricia Sueltz, Sun's president of software products and platforms, said IBM's public displeasure with Sun over Java stems from competition in the server hardware arena. "We cannot confuse IBM's woes in the server [hardware] market with its commitment to Java. They are with us helping to determine the standards," she said.

Mark Driver, an analyst at Stamford, Conn.-based Gartner Group Inc., said the fact that IBM kept Sun in the dark about its plans indicates the depth of IBM's frustration with Sun. "IBM has been an integral part of Java development for a long time," he said. "It has done a lot of work, but Sun gets all the credit."

Computerworld reporter Carol Sliwa contributed to this story.

Continued from page 3

Client-side Java

— at least when the conditions are right.

Food Services of America tried an HTML interface for the application, but company developers decided that the browser-based approach wouldn't cut it for big orders. "Imagine trying to order 100 books from Amazon.com and the session it would take to do that," Harper said.

His team turned to a full-blown Java application to give users a more flexible way to place orders without having to worry about their desktop operating systems, since Java can run anywhere.

"The mail traffic on [Java's] Swing [graphical user interface classes] is huge, so somebody's writing desktop apps in Java," said Sun Microsystems Inc. Fellow James Gosling, the creator of the 5-year-old programming language.

Bill Conroy, a senior vice president in software engineering at Bank of America Corp. in Chicago, said his company can use client-side Java for its internal trading systems because "we can control the configuration on the machines" and ensure that those PCs have virtual machines that are finely tuned to run the Java code.

But for any applications going outside the company's firewalls, programmers use server-based Java components to generate HTML because the bank's financial customers "aren't going to be happy if I'm reconfiguring their Java virtual machine," said Conroy.

Some companies face delivery issues even with an internal user base. For instance, Moline, Ill.-based Deere & Co.'s commercial and consumer equipment division is delivering a Web-based sales and marketing report application to employees in the field.

But it's sticking with thin HTML-based clients so it doesn't have to worry about installing or updating software on remote machines or the "overhead of downloading applications or [browser-based] applets," said Doug Taylor, team leader on the division's WebWorks team.

Slow performance and uneven Java support in browsers from Microsoft Corp. and Netscape Communications Corp. drove developers at many companies to shun Java applets, which often frustrated users waiting for the downloads.

Many programmers eventually turned to newer server-based technologies, such as servlets and Java Server Pages, to help generate the HTML that gets delivered to browsers.

Several JavaOne attendees said they plan to stick with the latter approach, particularly when delivering Web content to a user base they don't know or can't control.

"Some of our clients won't even accept Java applets," said an information technology architect at a prominent national bank. "They have just as sophisticated a firewall setup as we do."

Client-side Java

New features in Sun's Java 2 Standard Edition Version 1.3 for developing client-side applications include:

40% faster start-up time for applications that use Swing graphical user interface classes

25% reduction in memory footprint

Developers Swinging Toward Java

Momentum doesn't shift overnight. In the case of Java, it took five long years of lawsuits, committee infighting and the demands of the Web to swing the developer pendulum away from Microsoft Windows.

With several hundred software vendors pledging to back Sun's J2EE development platform and 2.5 million developers claiming Java as their lingua franca for Web development, enterprise Java development is in motion.

J2EE promises to be the foundation for Web-based applications that run on heterogeneous hardware and operating systems. According to Yefim Natis, an analyst at Gartner Group, Java and Microsoft's Windows programming tools are the most viable development environments for the enterprise, but scalability concerns with Windows are tipping the scales in Java's favor.

"Users essentially have a choice of only two environments: Enterprise Java, which is today Sun's J2EE, or Enterprise Windows, which is today [Microsoft's] DNA 2000," he said. "The degree to which DNA 2000 continues to change and continues to be not proven as a safe platform for enterprise applications is the degree to which enterprise Java will continue its momentum."

Developers echoed that sentiment at JavaOne, saying that while Microsoft technologies provided a good starting point for developing applications, they planned to shift to Java to meet higher scalability requirements.

"I call Microsoft's Transaction Server the poor man's transaction server," said Louis Williams, a programmer for the U.S. Postal Service, which is shifting to a Java-based application environment. "For the smaller applications, Microsoft and [Visual Basic] are easier to work with. But the Java application server is the way to go when you have 2,000 concurrent users."

Rusty Frantz, vice president of engineering at OutPurchase.com Inc., a Web-based procurement outsourcing service in Mountain View, Calif., is shifting from a Microsoft-centric development environment to a Java-based one, citing problems with the complexity of Windows 2000 Distributed Component Object Model (DCOM) architecture and finding developers to create those DCOM objects.

"It was a challenge to find people who can write to that level of complexity," said Frantz. "Microsoft's environment is very easy for developing two-tier applications, but getting it to scale and develop the middle tier is not a simplistic thing to learn. I have good people, but not that much time, so I'm going with Java as the easier path."

Joe Clabby, group vice president at market research and consulting firm Aberdeen Group Inc. in Boston, said Microsoft's environment offers a rapid development option, albeit for Microsoft-only environments.

"Java is an application-building environment geared toward the Web and heterogeneous computing environments, while Microsoft's DNA . . . provides a way to wrap Microsoft graphics with Microsoft middleware in a Microsoft programming environment on Windows," he said.

Clabby said he expects Microsoft to continue to offer a wider range of support for Java in the near term. "Microsoft does what the market tells it to do, and the market is clearly telling it to do Java," he said. "*Embrace* is not the right word: Microsoft would rather embrace Windows DNA and hug Java." – *Lee Copeland*

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FRANK HAYES/FRANKLY SPEAKING

End of an era

IS IT TIME TO START thinking about a post-Microsoft era? Not an era without Microsoft — that's not just unthinkable, it's plain silly. IBM didn't disappear in the post-IBM era, after Big Blue stopped being the single dominant force in data processing. Microsoft won't disappear if it stops being the single dominant force in IT. Even Steve Ballmer finally acknowledged that last week, a few hours before Judge Thomas Penfield Jackson ordered Microsoft split in two. After months of describing such a split as a death sentence for Microsoft, Ballmer told Norwegian IT vendors that "we'll be fine either way. We'll move on."

No, Microsoft won't be gone. But for corporate IT, the end of the era of that dominant Microsoft Windows-PC-and-applications platform will be pretty scary stuff.

Think that's unlikely? Then you probably don't remember the days when IBM ruled the glass house. In the IBM era, the "standard platform" wasn't just the IBM mainframe. It was the IBM mainframe *shop*.

Sure, it was the 360, and Cobol, and JCL, and IMS. But more than that, it was the collection of procedures and practices the shop (and everyone in it) used. Move a programmer or computer operator from one IBM shop to another in those days, and maybe 90% of the job would be exactly the same.

When the IBM era ended, that standard platform was gone. Sure, all the mainframes and languages and databases were still there. But the certainty of what it meant to work in an IBM mainframe shop was gone. Change jobs and maybe you'd have to learn some new CASE tool, or a relational database, or client/server, or a PC network.

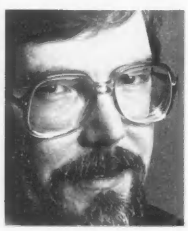
Paradise lost? Hardly. All that new technology — and what came after it — revolutionized our relationship with users and our importance to the business. It made IT phenomenally important and opened opportunities we once would never have thought possible.

But for anyone who valued the stability and predictability of data processing in the IBM era, the post-IBM era was terrifying. No wonder so many people fought against the PC for so hard and so long. Maybe they didn't know exactly what they were afraid of — but they were right to be afraid. For good or ill, it was the end of the world as they knew it.

Now we have a different standard platform. Windows offers nothing like the kind of standard the old glass house presented. Move from one IT shop to another today and you'll probably face different hardware, different languages, different procedures and practices, different philosophies of system development, different ways of dealing with users and a different relationship with the rest of the business.

But Windows and PCs and Microsoft applications will almost certainly still be in there somewhere. They're islands of predictability in IT — maybe the only sure thing left in most IT shops.

Windows and PCs may be the only sure thing left in IT shops.



And if they stop being so predictable. . . . Feel that chill running down your spine? Now you have some small idea how those glass-house data processors felt.

That post-Microsoft era is coming. Microsoft knows it. That's why "Next Generation Windows Services" (or as it's sometimes called, "Next Generation *Web* Services") is so important to the company.

Other IT vendors know it too — that's why so many of them have stopped competing with those monopolistic Microsoft products and are more concerned with connecting cell phones to live data streams or setting up e-business alliances.

And deep inside, we know it as well.

But we'd better start thinking seriously about it — and soon. Because when that era ends, everything will be a little less predictable for IT — and a lot more terrifying. ◗

Hayes, Computerworld's staff columnist, has covered IT for more than 20 years. His e-mail address is frank_hayes@computerworld.com.

SHARK TANK

IN THE CARDS New IT VP's lackey frets to e-mail sysadmin pilot fish that the veep put the wrong e-mail address on his new business cards. Fish investigates: "The address is formatted in a way that couldn't possibly be used as an e-mail address. Has he ever even *used* e-mail?" the fish wonders. The lackey hits on a solution: "Can we change the Internet addressing rules so the new VP doesn't have to order new cards?"

RIGHT HAND, MEET LEFT HAND IT consulting firm grows and grows and splits into two divisions: telecom and "classic." A pilot fish in the telecom division is on a team that's finishing Phase I of a major project for a big customer, with the Phase II contract days from being signed. Then the fish hears from the client: Nice work, guys, but you've been underbid for Phase II – adios. And the winning proposal? An unsolicited, eleventh-hour, lowball bid from – who else? – the "classic" division.

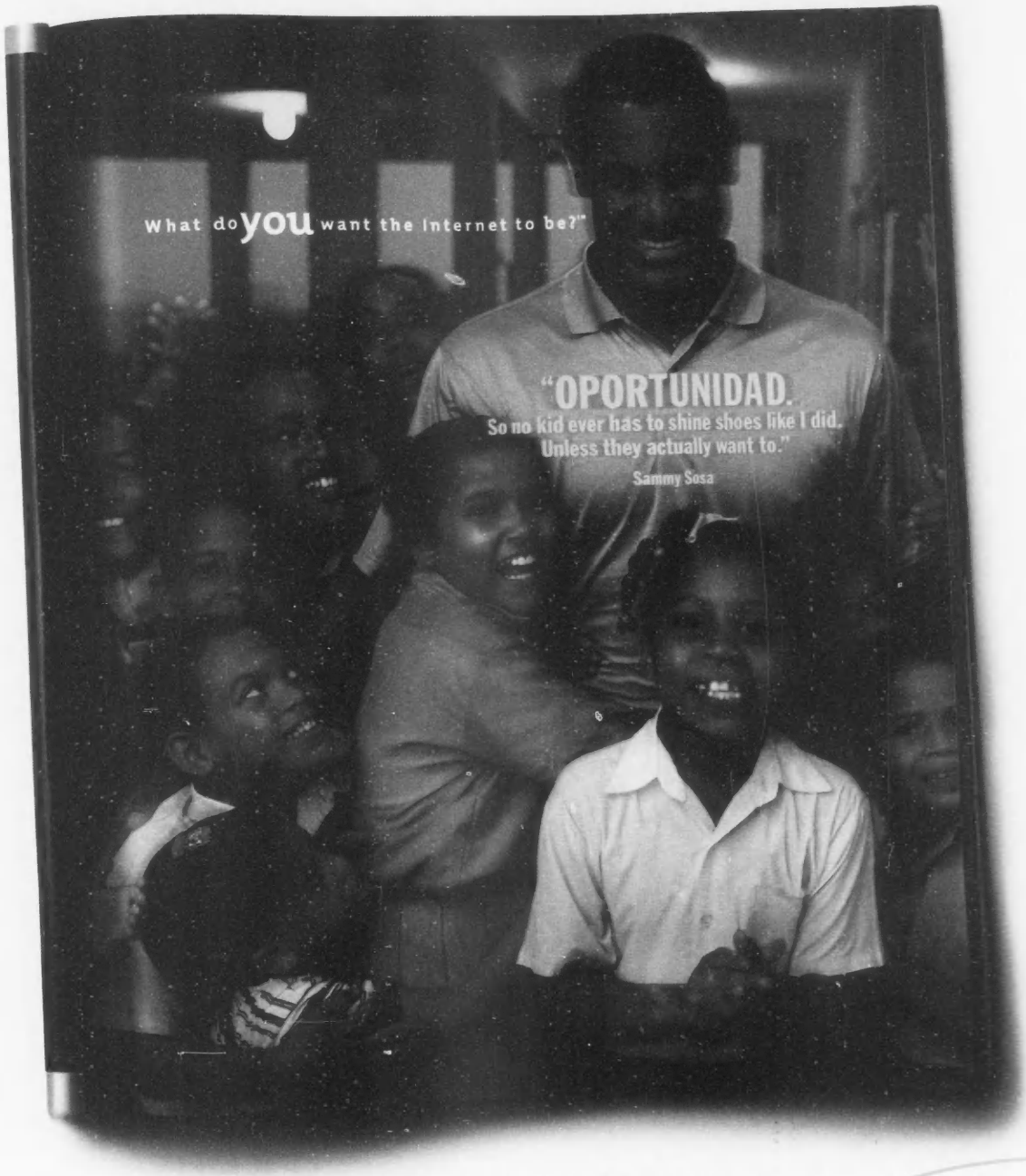
CROWBAR, ANYONE? IS chief pilot fish gets a distress call from an engineering VP who says he's having trouble getting his laptop out of its docking station. "I practically have to pry it out these days," the VP says. Chief dispatches a tech, who shuts down the VP's laptop and flips the undocking lever. The machine pops out. "Oh, I never saw that lever before," says the VP. "So that's how you do it."

HARD TIMES This pilot fish at a Rust Belt manufacturer reports that half the IT staff is gone because of cost cutting. The lucky survivors? Along with double IT duty, they also have to work the factory production line an hour a day. Best of all, says the fish, they still get to field "questions of why the computers aren't being fixed in a timely fashion."

This California university is building off-campus housing for IT faculty, staff and grad students. One-fifth of the units have to be for low-income tenants – which, an administrator jokes, means most of the IT staff will qualify. Har har. Send me your own missive of misery: **sharky@computerworld.com**. If your story prints, you get a sharp Shark shirt. And get fresh shark bait online every day at *computerworld.com/sharky*.

The 5th Wave

"So far our Web presence has been pretty good. We've gotten some orders, a few inquiries and nine guys who want to date our logo."



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